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11/8/04

? b 344,347,350,371

[File 344] Chinese Patents Abs Jan 1985-2006/Jan  
(c) 2006 European Patent Office. All rights reserved.

[File 347] JAPIO Dec 1976-2006/Jan(Updated 061009)  
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[File 350] Derwent WPIX 1963-2006/UD=200671  
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\*File 350: DWPI has been enhanced to extend content and functionality of the database. For more info, visit  
<http://www.dialog.com/dwpi/>.

[File 371] French Patents 1961-2002/BOPI 200209

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\*File 371: This file is not currently updating. The last update is 200209.

; set hilight off

Hilight = off

; set hilight on

Hilight = on

? s bone? ?

s1 74407 S BONE? ?

? s fix??? or fixat????

Processing

2246930 FIX???

141720 FIXAT????

s2 2306703 S FIX??? OR FIXAT????

? s plate? ?

Processing

s3 2105063 S PLATE? ?

? s deform??? or deforma???? or shap??? s s1(5n)s2

207895 DEFORM???

297052 DEFORMA????

0 SHAP??? S S1

2306703 S2  
0 SHAP??? S S1(5N)S2  
S4 420830 S DEFORM??? OR DEFORMA???? OR SHAP??? S S1(5N)S2

? delete s4  
Set 4 has been deleted

? d s  
Set Items Description  
S1 74407 S BONE? ?  
S2 2306703 S FIX??? OR FIXAT????  
S3 2105063 S PLATE? ?

? s s1(5n)s3  
74407 S1  
2105063 S3  
S4 2444 S S1(5N)S3

? s deform??? or deforma???? or shape?? or shaping??  
207895 DEFORM???  
297052 DEFORMA????  
2112148 SHAPE??  
104552 SHAPING??  
S5 2473027 S DEFORM??? OR DEFORMA???? OR SHAPE?? OR SHAPING??

? s s4 and s5  
2444 S4  
2473027 S5  
S6 845 S S4 AND S5

? s hole? ? or opening? ? or aperture? ?  
Processing  
1360209 HOLE? ?  
1445890 OPENING? ?  
329380 APERTURE? ?  
S7 2849135 S HOLE? ? OR OPENING? ? OR APERTURE? ?

? s thread?? or threading??

295664 THREAD??

19512 THREADING??

s8 303793 S THREAD?? OR THREADING??

? s s7(10n)s8

Processing

2849135 s7

303793 s8

s9 52270 S S7(10N)S8

? s s6 and s9

845 s6

52270 s9

s10 76 S S6 AND S9

? d s

Set Items Description

s1 74407 S BONE? ?

s2 2306703 S FIX??? OR FIXAT????

s3 2105063 S PLATE? ?

s4 2444 S S1(5N)S3

s5 2473027 S DEFORM??? OR DEFORMA???? OR SHAPE?? OR SHAPING??

s6 845 S S4 AND S5

s7 2849135 S HOLE? ? OR OPENING? ? OR APERTURE? ?

s8 303793 S THREAD?? OR THREADING??

s9 52270 S S7(10N)S8

s10 76 S S6 AND S9

? s tool? ?

s11 662765 S TOOL? ?

? s s10 and s11

76 S10

662765 S11

s12 9 S S10 AND S11

? set hilight off

Hilight = off

; set hilight on

Hilight = On

? t s12/3,k/1-9

12/3,K/1 (Item 1 from file: 350)

Derwent WPIX

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0015961159 *Drawing available*

WPI Acc no: 2006-492827/200650

Related WPI Acc No: 2006-446308

XRPX Acc No: N2006-397821

**Fracture fixation plate shaping kit for surgical devices, has handle of specific size and shape for engaging with tubular elements removably coupled in threaded holes in bone plate**

Patent Assignee: CASTANEDA J E (CAST-I); KORTENBACH J A (KORT-I); ORBAY J L (ORBA-I)

Inventor: CASTANEDA J E; KORTENBACH J A; ORBAY J L

Patent Family ( 1 patents, 1 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| US 20060161158 | A1   | 20060720 | US 200411917       | A    | 20041214 | 200650 | B    |
|                |      |          | US 2006384841      | A    | 20060320 |        |      |

Priority Applications (no., kind, date): US 200411917 A 20041214; US 2006384841 A 20060320

Patent Details

| Patent Number  | Kind | Lan | Pgs | Draw | Filing Notes         |              |
|----------------|------|-----|-----|------|----------------------|--------------|
| US 20060161158 | A1   | EN  | 16  | 18   | C-I-P of application | US 200411917 |

**Fracture fixation plate shaping kit for surgical devices, has handle of specific size and shape for engaging with tubular elements removably coupled in threaded holes in bone plate**

Original Titles:

**Bone fracture fixation plate shaping system**

**Alerting Abstract ...NOVELTY - A shaping tool** has handle of specific size and shape for engaging with one of the tubular elements removably coupled in **threaded holes** (14) in a **bone plate** (10). Another **shaping tool** has handle and end sized and **shaped** to engage with other tubular elements.

... **shaping tool**; and **plate shaping method**... ... USE - For surgical devices for implanting and **shaping bone plates**.

... ADVANTAGE - The drilling of holes in the bone in alignment with threaded holes in the bone plate is performed effectively... 10 bone plate  
... 18 insertion tool

Title Terms .../Index Terms/Additional Words: SHAPE;

## Original Publication Data by Authority

### Original Abstracts:

Removable guide tips are pre-assembled into threaded holes of a fracture fixation plate. The guide tips may be used with or without drill guides to guide a drill along the axes of threaded holes defined in the plate. In addition, the tips may be used with bending tools to contour the plate laterally, longitudinally and with twist. More particularly, such plate contouring can be performed while the plate is located on the bone. >

### Claims:

What is claimed is: 1. A fracture fixation plate shaping kit, comprising:  
a) a bone plate including a plurality of longitudinally displaced threaded holes;  
b) a plurality of removable tubular elements removably coupled in said threaded holes;  
c) a first shaping tool having a handle portion and a portion sized and shaped to engage with one of said tubular elements; and  
d) a second shaping tool having a handle portion and an end portion sized and shaped to engage with another of said tubular elements, said first and second shaping tools engageable with said tubular elements for the manual application of force to said bone plate to bend said bone plate.

12/3,K/2 (Item 2 from file: 350)

Derwent WPIX

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0014214010 Drawing available

WPI Acc no: 2004-399752/200437

Related WPI Acc No: 2004-399753; 2004-399754; 2004-399755; 2004-399761; 2005-295310

XRPX Acc No: N2004-318686

**Bone fixation used for support, movement, protection, storage of minerals in blood cells of human involves securing bone plate to second portion of bone while adjusting angular disposition of bone plate relative to two bone portions**

Patent Assignee: ACUMED LLC (ACUM-N); HUEBNER R J (HUEB-I)

Inventor: HORST S P; HUEBNER R J

Patent Family ( 16 patents, 107 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| US 20040102775 | A1   | 20040527 | US 2002427908      | P    | 20021119 | 200437 | B    |
|                |      |          | US 2002427910      | P    | 20021119 |        |      |
|                |      |          | US 2003512111      | P    | 20031017 |        |      |
|                |      |          | US 2003512136      | P    | 20031017 |        |      |

|               |    |          |                |   |          |        |   |
|---------------|----|----------|----------------|---|----------|--------|---|
|               |    |          | US 2003512322  | P | 20031017 |        |   |
|               |    |          | US 2003512323  | P | 20031017 |        |   |
|               |    |          | US 2003717015  | A | 20031119 |        |   |
| WO 2004045384 | A2 | 20040603 | WO 2003US36926 | A | 20031119 | 200437 | E |
| WO 2004045455 | A2 | 20040603 | WO 2003US37179 | A | 20031119 | 200437 | E |
| AU 2003294342 | A1 | 20040615 | AU 2003294342  | A | 20031119 | 200470 | E |
| AU 2003294414 | A1 | 20040615 | AU 2003294414  | A | 20031119 | 200470 | E |
| WO 2005037114 | A1 | 20050428 | WO 2004US34571 | A | 20041018 | 200529 | E |
| WO 2005046494 | A1 | 20050526 | WO 2003US37066 | A | 20031119 | 200535 | E |
| AU 2003291114 | A1 | 20040606 | AU 2003291114  | A | 20031119 | 200553 | E |
| EP 1572045    | A2 | 20050914 | EP 2003789897  | A | 20031119 | 200560 | E |
|               |    |          | WO 2003US37179 | A | 20031119 |        |   |
| AU 2003291114 | A8 | 20050606 | AU 2003291114  | A | 20031119 | 200565 | E |
| GB 2412875    | A  | 20051012 | WO 2003US37179 | A | 20031119 | 200567 | E |
|               |    |          | GB 200512491   | A | 20050620 |        |   |
| JP 2006506194 | W  | 20060223 | WO 2003US37179 | A | 20031119 | 200619 | E |
|               |    |          | JP 2004553986  | A | 20031119 |        |   |
| AU 2003294342 | A8 | 20051110 | AU 2003294342  | A | 20031119 | 200634 | E |
| GB 2412590    | B  | 20060517 | WO 2003US37231 | A | 20031119 | 200634 | E |
|               |    |          | GB 200512488   | A | 20050620 |        |   |
| KR 2005083916 | A  | 20050826 | WO 2003US37179 | A | 20031119 | 200647 | E |
|               |    |          | KR 2005709077  | A | 20050519 |        |   |
| KR 2005075440 | A  | 20050720 | WO 2003US37231 | A | 20031119 | 200648 | E |
|               |    |          | KR 2005709089  | A | 20050519 |        |   |

Priority Applications (no., kind, date): US 2003512323 P 20031017; US 2003512322 P 20031017; US 2003512136 P 20031017; US 2003512111 P 20031017; US 2002427910 P 20021119; US 2002427908 P 20021119; US 2003717015 A 20031119

#### Patent Details

| Patent Number  | Kind | Lan | Pgs | Draw | Filing Notes                            |  |
|----------------|------|-----|-----|------|---|--|
| US 20040102775 | A1   | EN  | 15  | 13   | Related to Provisional<br>US 2002427908 |  |
|                |      |     |     |      | Related to Provisional<br>US 2002427910 |  |
|                |      |     |     |      | Related to Provisional<br>US 2003512111 |  |
|                |      |     |     |      | Related to Provisional<br>US 2003512136 |  |
|                |      |     |     |      | Related to Provisional<br>US 2003512322 |  |
|                |      |     |     |      | Related to Provisional<br>US 2003512323 |  |

|                                      |  |    |  |  |  |  |
|--------------------------------------|--|----|--|--|--|--|
| WO 2004045384                        | A2   | EN |  |  |  |  |
| National Designated States, Original | AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW |    |  |  |  |  |

|                                      |   |    |  |                     |               |
|--------------------------------------|---|----|--|---------------------|---------------|
| Regional Designated States, Original | AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW   |    |  |                     |               |
| WO 2004045455                        | A2  | EN |  |                     |               |
| National Designated States, Original | AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW          |    |  |                     |               |
| Regional Designated States, Original | AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW   |    |  |                     |               |
| AU 2003294342                        | A1  | EN |  | Based on OPI patent | WO 2004045384 |
| AU 2003294414                        | A1  | EN |  | Based on OPI patent | WO 2004045455 |
| WO 2005037114                        | A1  | EN |  |                     |               |
| National Designated States, Original | AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW |    |  |                     |               |
| Regional Designated States, Original | AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW   |    |  |                     |               |
| WO 2005046494                        | A1  | EN |  |                     |               |
| National Designated States, Original | AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW    |    |  |                     |               |
| Regional Designated States, Original | AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW   |    |  |                     |               |

|                                      |  |       |  |                     |                |
|--------------------------------------|--|-------|--|---------------------|----------------|
| AU 2003291114                        | A1   | EN    |  | Based on OPI patent | WO 2005046494  |
| EP 1572045                           | A2   | EN    |  | PCT Application     | WO 2003US37179 |
|                                      |  |       |  | Based on OPI patent | WO 2004045455  |
| Regional Designated States, Original | AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR |       |  |                     |                |
| AU 2003291114                        | A8   | EN    |  | Based on OPI patent | WO 2005046494  |
| GB 2412875                           | A  | EN    |  | PCT Application     | WO 2003US37179 |
|                                      |  |       |  | Based on OPI patent | WO 2004045455  |
| JP 2006506194                        | W  | JA 22 |  | PCT Application     | WO 2003US37179 |
|                                      |  |       |  | Based on OPI patent | WO 2004045455  |
| AU 2003294342                        | A8   | EN    |  | Based on OPI patent | WO 2004045384  |
| GB 2412590                           | B  | EN    |  | PCT Application     | WO 2003US37231 |
|                                      |  |       |  | Based on OPI patent | WO 2004045389  |

|               |   |    |  |                     |                |
|---------------|---|----|--|---------------------|----------------|
| KR 2005083916 | A | KO |  | PCT Application     | WO 2003US37179 |
|               |   |    |  | Based on OPI patent | WO 2004045455  |
| KR 2005075440 | A | KO |  | PCT Application     | WO 2003US37231 |
|               |   |    |  | Based on OPI patent | WO 2004045389  |

used for support, movement, protection, storage of minerals in blood cells of human involves securing bone plate to second portion of bone while adjusting angular disposition of bone plate relative to two bone portions  
Original Titles:

**BONE PLATES WITH SLOTS... ...Bone plates with slots... ...DEFORMABLE BONE PLATES**

**... ...DEFORMABLE BONE PLATES**

**... ...Adjustable bone plates**

**... ...Deformable bone plates**

**... ...Bone plates with slots... ...DEFORMABLE BONE PLATES**

**... ...PLAQUES VISSEES DEFORMABLES**

**... ...BONE PLATES WITH SLOTS**

**Alerting Abstract** ...NOVELTY - The method involves securing a **bone plate** (50) to a second portion of a bone while adjusting the angular disposition of **bone plate** relative to the two portions of the bone.

**DESCRIPTION** - An INDEPENDENT CLAIM is also included for a **bone plate** for **bone** fixation...

**... DESCRIPTION OF DRAWINGS** - The figure is a volar view of the distal radius and the **bone plate**.

**... ...50 Bone plate**

## Original Publication Data by Authority

### Original Abstracts:

**Bone plates** configured to be **deformed** after the **bone plates** have being secured to **bone**, apparatus including the **bone plates**, and methods of using the **bone plates** to fix **bones**.

**Bone**... ... Bone plates having slots configured to permit positioning of the bone plates on bone, and methods of using the bone plates for bone fixation... ... A system, including method, apparatus, components, and kits, for guiding a hole-forming tool and/or a fastener through a bone and then to a bone-repair device that... ... **Bone plates** configured to be **deformed** after the **bone plates** have being secured to **bone**, apparatus including the **bone plates**, and methods of using the **bone plates** to fix **bones**.

... ... La presente invention a trait a des plaques vissees conformes a etre **deformees** apres leur solidarisation a l'os, un appareil comprenant les plaques vissees, et des procedes... ... Systems, including methods, apparatus, and kits, for fixing the distal radius with **bone plates**. A **bone plate** (80) according to the invention has a proximal portion (84) a distal portion (86) and a plurality of **apertures** including nonlocking (nonthreaded) **apertures** 92 and locking (threaded) **apertures** 94 (Figure 5... ... **Bone plates** having slots configured to permit positioning of the **bone plates** on **bone**, and methods of using the **bone plates** for **bone** fixation

### Claims:

comprising: placing respective first and second fasteners through an opening and a slot of a **bone plate** and into a first portion of a bone having a discontinuity flanked by the first... ... with the opening and the slot to define a permitted range of motion for the **bone plate**; securing the **bone plate** to the second portion of the bone; adjusting an angular disposition of the **bone plate** relative to the first portion of the bone after the steps of placing and securing... ... of the first and second portions of the bone; and fixing the angular disposition of the **bone plate** relative to the first portion of the bone.

12/3,K/3 (Item 3 from file: 350)

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0013392209 *Drawing available*

WPI Acc no: 2003-482186/200345

XRAM Acc no: C2003-128914

XRPX Acc No: N2003-383474

**Plate for osteosynthesis has elongate shape body provided with holes for passage of corresponding screws for fixing to bone, and reduced section defining intermediate point of greater flexibility**

Patent Assignee: BIOTEK SRL (BIOT-N); DEL MEDICO N (DMED-I); VESE S (VESE-I)

Inventor: DEL MEDICO N

Patent Family ( 6 patents, 99 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| WO 2003039384  | A1   | 20030515 | WO 2002IB3742      | A    | 20020911 | 200345 | B    |
| EP 1448110     | A1   | 20040825 | EP 2002765230      | A    | 20020911 | 200456 | E    |
|                |      |          | WO 2002IB3742      | A    | 20020911 |        |      |
| AU 2002330363  | A1   | 20030519 | AU 2002330363      | A    | 20020911 | 200464 | E    |
| US 20050010225 | A1   | 20050113 | WO 2002IB3742      | A    | 20020911 | 200506 | E    |
|                |      |          | US 2004494894      | A    | 20040507 |        |      |
| CN 1585624     | A    | 20050223 | CN 2002822288      | A    | 20020911 | 200537 | E    |
| IT 1331886     | B    | 20060125 | IT 2001TO1059      | A    | 20011109 | 200611 | E    |

Priority Applications (no., kind, date): IT 2001TO1059 A 20011109

Patent Details

| Patent Number                        | Kind   | Lan | Pgs | Draw | Filing Notes |
|--------------------------------------|--|-----|-----|------|--------------|
| WO 2003039384                        | A1   | EN  | 12  | 6    |              |
| National Designated States, Original | AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW |     |     |      |              |

|                                      |   |    |  |                     |               |
|--------------------------------------|---|----|--|---------------------|---------------|
| Regional Designated States, Original | AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW |    |  |                     |               |
| EP 1448110                           | A1  | EN |  | PCT Application     | WO 2002IB3742 |
|                                      |   |    |  | Based on OPI patent | WO 2003039384 |
| Regional Designated States, Original | AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR                         |    |  |                     |               |
| AU 2002330363                        | A1  | EN |  | Based on OPI patent | WO 2003039384 |
| US 20050010225                       | A1  | EN |  | PCT Application     | WO 2002IB3742 |

**Plate for osteosynthesis has elongate shape body provided with holes for passage of corresponding screws for fixing to bone, and reduced...**

**Alerting Abstract ...NOVELTY** - An osteosynthesis plate has an elongate **shape** body (2) provided with holes for the passage of corresponding screws (6) for fixing to...

**DESCRIPTION** - An osteosynthesis plate has an elongate **shape** body provided with holes for the passage of corresponding screws for fixing to a bone.... ...The reduced section is coupled with a mobile portion of the complementary **shape** provided with a mechanism to constrain the mobile portion to the elongate body to decrease...  
...**ADVANTAGE** - The inventive plate can be manufactured in different **shapes** and sizes to suit different types of bones and fractures. The screw allows varying of...

#### **Technology Focus ...**

The mechanism comprises a screw having a threaded body that engages into an internally **threaded** pin inserted into a through **hole** obtained in the mobile portion.... ... The reduced section is obtained by making a frustoconical **threaded** through **hole**.

... ... The mobile portion is a **threaded** frustoconical screw of **shape** complementary to the frustoconical **hole**. The frustoconical screw is provided with a seat for inserting a screwdriver **tool**.

... ... seat is accessible from a side of the plate opposite to the side facing the **bone** to which the **plate** is applied

**Title Terms .../Index Terms/Additional Words: SHAPE;**

#### **Original Publication Data by Authority**

##### **Original Abstracts:**

an increased flexibility, said portion (11) being coupled with a mobile portion (14) of complementary **shape** provided with means (12) allowing, by acting from the exterior of the plate, to constrain.... ... an increased flexibility. The portion of reduced section coupled with a mobile portion of complementary **shape** acting from the exterior of the plate, to constrain the mobile portion to the body.... ... an increased flexibility, said portion (11) being coupled with a mobile portion (14) of complementary **shape** provided with means (12) allowing, by acting from the exterior of the plate, to constrain...

##### **Claims:**

What is claimed is:1. A plate for osteosynthesis, comprising a body of elongate **shape**, provided with a plurality of holes for the passage of corresponding screws for the fixing to a bone wherein said body of elongate **shape**, includes a portion of reduced section having a cross-sectional area smaller than the cross-sectional area of said body of

elongate shape to define an intermediate point, said intermediate point having a greater flexibility than said body of elongate shape, said portion of reduced section being coupled with a mobile portion of complementary shape provided with an adjustable member adjustable from the exterior of said plate, to constrain said mobile portion to said body of elongate shape in order to decrease the flexibility of said intermediate point.

12/3,K/4 (Item 4 from file: 350)

Derwent WPIX

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0010766599 *Drawing available*

WPI Acc no: 2001-380698/200140

XRPX Acc No: N2001-279113

**Self-drilling and tapping multi-drive bone screw for rigid fixation of craniomaxillofacial tissue grafts and bone plates includes tip which incorporates twist drill shaft with sharp cutting point tip**

Patent Assignee: BALFOUR A R (BALF-I); CARCHIDI J E (CARC-I)

Inventor: BALFOUR A R; CARCHIDI J E

Patent Family ( 2 patents, 1 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| US 20010004694 | A1   | 20010621 | US 199881605       | P    | 19980414 | 200140 | B    |
|                |      |          | US 1999290433      | A    | 19990413 |        |      |
| US 6398785     | B2   | 20020604 | US 1999290433      | A    | 19990413 | 200242 | E    |

Priority Applications (no., kind, date): US 199881605 P 19980414; US 1999290433 A 19990413

Patent Details

| Patent Number  | Kind | Lan | Pgs | Draw | Filing Notes           |              |
|----------------|------|-----|-----|------|------------------------|--------------|
| US 20010004694 | A1   | EN  | 5   | 7    | Related to Provisional | US 199881605 |

**drilling and tapping multi-drive bone screw for rigid fixation of craniomaxillofacial tissue grafts and bone plates includes tip which incorporates twist drill shaft with sharp cutting point tip**

Original Titles:

APPARATUS FOR RIGIDLY FIXING CRANIMAXILLOFACIAL TISSUE GRAFTS AND BONE PLATES  
...Apparatus for rigidly fixing craniomaxillofacial tissue grafts and bone plates.

**Alerting Abstract** ...twist drill shaft with a sharp cutting point tip (12b) to pierce and drill pilot hole and prepare for the insertion of self-tapping screw threads (12c). The cylindrical dome shaped head (14) allow rigid fixation of craniomaxillofacial tissue grafts and geometrically sized bone plates is formed on the screw distal to the drilling and

tapping features.

**DESCRIPTION** - A spline feature (14e) is incorporated into the cylindrically dome shaped head for easy pickup, assembly and insertion of the bone screw with a corresponding spline driver tool (20). The spline driver feature also allows the bone screw (10) to be driven with either a standard square or cross blade driver tool. An INDEPENDENT CLAIM includes a driving tool.

... USE - Bone screw for rigid fixation of craniomaxillofacial tissue grafts and bone plates.

... 14 Cylindrical dome shaped head... 20 Spline driver tool

## Original Publication Data by Authority

### Original Abstracts:

and tapping multi-drive bone screw (10) for rigid fixation of craniomaxillofacial tissue grafts and bone plates has a tip (12a) which incorporates a defined twist drill shaft with a sharp cutting point tip (12b) to easily pierce and drill a pilot hole and prepare for the insertion of self-tapping screw threads (12c). A cylindrical dome shaped head (14) for rigid fixation of craniomaxillofacial tissue grafts and geometrically sized bone plates is formed on the screw distal to the drilling and tapping features. A spline feature (14e) is incorporated into the cylindrically dome shaped head for easy pickup, assembly and insertion of the bone screw with a corresponding spline driver tool (20). The spline driver feature also allows the bone screw (10) to be driven with either a standard square or cross blade driver tool...  
... A self-drilling and tapping multi-drive bone screw (10) for rigid fixation of craniomaxillofacial tissue grafts and bone plates has a tip (12a) which incorporates a defined twist drill shaft with a sharp cutting point tip (12b) to easily pierce and drill a pilot hole and prepare for the insertion of self-tapping screw threads (12c). A cylindrical dome shaped head (14) for rigid fixation of craniomaxillofacial tissue grafts and geometrically sized bone plates is formed on the screw distal to the drilling and tapping features. A spline feature (14e) is incorporated into the cylindrically dome shaped head for easy pickup, assembly and insertion of the bone screw with a corresponding spline driver tool (20). The spline driver feature also allows the bone screw (10) to be driven with either a standard square or cross blade driver tool.

### Claims:

What is claimed: 1. Apparatus for retention of tissue grafts and bone plates to a bone site comprising an elongated body member having a generally cylindrical shaft having a longitudinal axis... Apparatus for retention of tissue grafts and bone plates to a bone site comprising an elongated bone screw body member having a generally cylindrical shaft having a...

12/3,K/5 (Item 5 from file: 350)

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0010587519 Drawing available

WPI Acc no: 2001-192605/200120

XRPX Acc No: N2001-136919

**Instruments for implanting tendon incorporate button with openings in for fixture filaments, outer aperture of bone-duct and plate shaped body**

Patent Assignee: SAUER M (SAUE-I); STORZ GMBH & CO KARL (STOR-N); STORZ GMBH & CO KG KARL

(STOR-N); STROBEL M (STRO-I)

Inventor: SAUER M; STROBEL M

Patent Family ( 7 patents, 25 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| DE 19941574    | A1   | 20010308 | DE 19941574        | A    | 19990901 | 200120 | B    |
| WO 2001015634  | A1   | 20010308 | WO 2000EP8567      | A    | 20000901 | 200121 | E    |
| EP 1212008     | A1   | 20020612 | EP 2000967641      | A    | 20000901 | 200239 | E    |
|                |      |          | WO 2000EP8567      | A    | 20000901 |        |      |
| US 20020161439 | A1   | 20021031 | WO 2000EP8567      | A    | 20000901 | 200274 | E    |
|                |      |          | US 200285515       | A    | 20020228 |        |      |
| EP 1212008     | B1   | 20040616 | EP 2000967641      | A    | 20000901 | 200439 | E    |
|                |      |          | WO 2000EP8567      | A    | 20000901 |        |      |
| DE 50006841    | G    | 20040722 | DE 50006841        | A    | 20000901 | 200450 | E    |
|                |      |          | EP 2000967641      | A    | 20000901 |        |      |
|                |      |          | WO 2000EP8567      | A    | 20000901 |        |      |
| US 6902573     | B2   | 20050607 | WO 2000EP8567      | A    | 20000901 | 200538 | E    |
|                |      |          | US 200285515       | A    | 20020228 |        |      |

Priority Applications (no., kind, date): DE 19941574 A 19990901

Patent Details

| Patent Number                       | Kind   | Lan | Pgs | Draw | Filing Notes                |               |
|-------------------------------------|--|-----|-----|------|-----------------------------|---------------|
| DE 19941574                         | A1   | DE  | 15  | 14   |                             |               |
| WO 2001015634                       | A1   | DE  |     |      |                             |               |
| National Designated States,Original | US   |     |     |      |                             |               |
| Regional Designated States,Original | AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE                      |     |     |      |                             |               |
| EP 1212008                          | A1   | DE  |     |      | PCT Application             | WO 2000EP8567 |
|                                     |  |     |     |      | Based on OPI patent         | WO 2001015634 |
| Regional Designated States,Original | AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI |     |     |      |                             |               |
| US 20020161439                      | A1   | EN  |     |      | Continuation of application | WO 2000EP8567 |
| EP 1212008                          | B1   | DE  |     |      | PCT Application             | WO 2000EP8567 |
|                                     |  |     |     |      | Based on OPI patent         | WO 2001015634 |
| Regional Designated States,Original | DE FR GB IT  |     |     |      |                             |               |
| DE 50006841                         | G  | DE  |     |      | Application                 | EP 2000967641 |
|                                     |  |     |     |      | PCT Application             | WO 2000EP8567 |
|                                     |  |     |     |      | Based on OPI patent         | EP 1212008    |
|                                     |  |     |     |      | Based on OPI patent         | WO 2001015634 |
| US 6902573                          | B2   | EN  |     |      | Continuation of application | WO 2000EP8567 |

## **Instruments for implanting tendon incorporate button with openings in for fixture filaments, outer aperture of bone-duct and plate shaped body**

**Alerting Abstract** ...aperture (33) of a bone-duct (32) containing the replacement tendon (16). The button has openings (58,60) through which are threaded the fixture filaments (36-39) of the replacement tendon. A center protuberance in the form of a cylindrical pin-shaped neck (50) fits into the aperture in a matching recess in the bone-duct when the button is placed on it. The button has a plate-shaped body (46)which has edges against which a tool can be placed for turning the button.

...**DESCRIPTION OF DRAWINGS** - The drawing shows a button placed against the **aperture** of a bone-duct, with four fixture filaments **threaded** through **openings**.

**Title Terms** .../Index Terms/Additional Words: **SHAPE**;

## **Original Publication Data by Authority**

### **Original Abstracts:**

bony canal (32) wherein the tendon transplant is situated. The button (40) is provided with **openings** (58, 60). Fixation threads (36-39) of the tendon transplant can be pulled through said openings. The button (40)... ... replacement in a channel within a bone comprises a button. Said button has a plate-shaped body and a cylindrical pin projecting from said plate-shaped body. At least two openings extend through that plate-shaped body and said cylindrical pin for threading fixation threads of a tendon replacement there through. Said plate-shaped body having edges adapted for applying a tool for rotating said button (FIG. 13... ... within a bone comprises a suture retention device. Said suture retention device has a plate-shaped body and a cylindrical pin projecting from said plate-shaped body. At least two openings extend through that plate-shaped body and said cylindrical pin for threading fixation threads of a tendon replacement therethrough. Said plate-shaped body having edges adapted for applying a tool for rotating said suture retention device (FIG. 13... ... bony canal (32) wherein the tendon transplant is situated. The button (40) is provided with openings (58, 60). Fixation threads (36-39) of the tendon transplant can be pulled through said openings. The button (40... ...

...

### **Claims:**

bone channel (32) in which the substitute tendon (16) is arranged, the button (40) comprises openings (58, 60) through which fixation threads (36 - 39) of the substitute tendon (16) can be threaded, and the button (40) comprising... ... opening (33) of the bone channel (32), in that the button (40) comprises a plate-shaped body (46) with the cylindrical pin (52) projecting therefrom, the button (40) can rest via the plate-shaped body (46) two-dimensionally and with frictional engagement in the area around the outer opening (33) of the bone channel (32), and in that the plate-shaped body (46) is provided with edges (54, 56) against which a tool (120) can be applied for rotating the button (40... ... tendon replacement in a channel in a bone comprising a button,said button having a plate-shaped body,a cylindrical pin projecting from said plate-shaped body and at least two openings extending through said plate-shaped body and said cylindrical pin for threading fixation threads of a tendon replacement... ... pin being configured to come to snugly fit within a countersunk recess in a channel within a bone, an area of said plate-shaped body surrounding said cylindrical pin being configured to come to rest to a bone surface surrounding said countersunk recess in said bone, and wherein said plate-shaped body having edges adapted for applying a turning tool thereon for turning said button with said tool... .

... in a channel in a bone comprising a suture retention device, said suture retention device having a plate-shaped body with first and second sides, a cylindrical pin projecting from the first side of said plate-shaped body; a recess in the second side of said plate-shaped body for accommodating ends of fixation threads of a tendon replacement; and at least two openings extending through said plate-shaped body and said cylindrical pin for threading of the fixation threads... ... wherein said cylindrical pin being configured to come to snugly fit within a countersunk recess in a channel within a bone, an area of said plate-shaped body surrounding said cylindrical pin being configured to come to rest to a bone surface surrounding said countersunk recess in said bone, and wherein said plate-shaped body having edges adapted for applying a turning tool thereon for turning said device with said tool.

12/3,K/6 (Item 6 from file: 350)

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0010069809 *Drawing available*

WPI Acc no: 2000-375827/200032

XRPX Acc No: N2000-282289

**Inter-body fusion cage-plate fixation assembly for spinal surgery procedures comprises cage which is implanted between two vertebral bodies with attachment plate and fastener connecting plate**

Patent Assignee: SDGI HOLDINGS INC (SDGI-N)

Inventor: JOSSE L; LEHUEC J; LEHUEC J C; LIU M

Patent Family ( 9 patents, 88 countries )

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| WO 2000024343 | A1   | 20000504 | WO 1999US25164     | A    | 19991027 | 200032 | B    |
| AU 200012364  | A    | 20000515 | AU 200012364       | A    | 19991027 | 200039 | E    |
| US 6156037    | A    | 20001205 | US 1998181362      | A    | 19981028 | 200066 | E    |
| EP 1124511    | A1   | 20010822 | EP 1999970912      | A    | 19991027 | 200149 | E    |
|               |      |          | WO 1999US25164     | A    | 19991027 |        |      |
| JP 2002528172 | W    | 20020903 | WO 1999US25164     | A    | 19991027 | 200273 | E    |
|               |      |          | JP 2000577960      | A    | 19991027 |        |      |
| EP 1124511    | B1   | 20050921 | EP 1999970912      | A    | 19991027 | 200563 | E    |
|               |      |          | WO 1999US25164     | A    | 19991027 |        |      |
| DE 69927398   | E    | 20051027 | DE 69927398        | A    | 19991027 | 200571 | E    |
|               |      |          | EP 1999970912      | A    | 19991027 |        |      |
|               |      |          | WO 1999US25164     | A    | 19991027 |        |      |
| ES 2249063    | T3   | 20060316 | EP 1999970912      | A    | 19991027 | 200622 | E    |
| DE 69927398   | T2   | 20060706 | DE 69927398        | A    | 19991027 | 200645 | E    |
|               |      |          | EP 1999970912      | A    | 19991027 |        |      |
|               |      |          | WO 1999US25164     | A    | 19991027 |        |      |

Priority Applications (no., kind, date): US 1998181362 A 19981028

Patent Details

| Patent Number                        | Kind  | Lan | Pgs | Draw                | Filing Notes   |
|--------------------------------------|---|-----|-----|---------------------|----------------|
| WO 2000024343                        | A1  | EN  | 31  | 17                  |                |
| National Designated States, Original | AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW |     |     |                     |                |
| Regional Designated States, Original | AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW  |     |     |                     |                |
| AU 200012364                         | A   | EN  |     | Based on OPI patent | WO 2000024343  |
| EP 1124511                           | A1  | EN  |     | PCT Application     | WO 1999US25164 |
|                                      |   |     |     | Based on OPI patent | WO 2000024343  |
| Regional Designated States, Original | AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE  |     |     |                     |                |
| JP 2002528172                        | W   | JA  | 29  | PCT Application     | WO 1999US25164 |
|                                      |   |     |     | Based on OPI patent | WO 2000024343  |
| EP 1124511                           | B1  | EN  |     | PCT Application     | WO 1999US25164 |
|                                      |   |     |     | Based on OPI patent | WO 2000024343  |
| Regional Designated States, Original | AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE  |     |     |                     |                |
| DE 69927398                          | E   | DE  |     | Application         | EP 1999970912  |
|                                      |   |     |     | PCT Application     | WO 1999US25164 |

|             |    |    |  |                     |                |
|-------------|----|----|--|---------------------|----------------|
|             |    |    |  | Based on OPI patent | EP 1124511     |
|             |    |    |  | Based on OPI patent | WO 2000024343  |
| ES 2249063  | T3 | ES |  | Application         | EP 1999970912  |
|             |    |    |  | Based on OPI patent | EP 1124511     |
| DE 69927398 | T2 | DE |  | Application         | EP 1999970912  |
|             |    |    |  | PCT Application     | WO 1999US25164 |
|             |    |    |  | Based on OPI patent | EP 1124511     |
|             |    |    |  | Based on OPI patent | WO 2000024343  |

**Alerting Abstract** ...projecting from a domed outer end (22). A contoured plate (11) is provided with an aperture that may be received on the stem. The stem threads receive a nut (21) to fix the plate to the cage. Bone screws anchor the plate to vertebral bodies (13,14). A hemispherical surface accommodates universal angulation of the plate relative...

DESCRIPTION - An INDEPENDENT CLAIMS is also included for a tool assembly...

### Original Publication Data by Authority

**Original Abstracts:**

projecting from a domed outer end (22). A contoured plate (11) is provided with an **aperture** (23A) receivable on the stem. The stem **threads** (26) receive a nut (21) to fix the **plate** to the cage. **Bone** screws (16-18) anchor the **plate** to vertebral bodies (13, 14). A hemispherical surface (23) on the plate (11) and surrounding... ... universal angulation of the plate relative to the cage. In addition to a cage installation **tool** (51), there is a plate installation **tool** assembly including a plate holder (31), a nut holder (34T) and cage adjuster (34), a... ... threaded stem projecting from a domed outer end. A contoured plate is provided with an **aperture** receivable on the stem. The stem **threads** receive a nut to fix the **plate** to the cage. **Bone** screws anchor the **plate** to vertebral bodies. A hemispherical surface on the plate and surrounding the stem-receiving aperture... ... universal angulation of the plate relative to the cage. In addition to a cage installation **tool**, there is a plate installation **tool** assembly including a cage installer, a plate holder, a nut holder and cage adjuster, a... ... projecting from a domed outer end (22). A contoured plate (11) is provided with an **aperture** (23A) receivable on the stem. The stem **threads** (26) receive a nut (21) to fix the **plate** to the cage. **Bone** screws (16-18) anchor the **plate** to vertebral bodies (13, 14). A hemispherical surface (23) on the plate (11) and surrounding... ... universal angulation of the plate relative to the cage. In addition to a cage installation **tool** (51), there is a plate installation **tool** assembly including a plate holder (31), a nut holder (34T) and cage adjuster (34), a...

**Claims:**

11) and outer end (22) of said fusion device (12) having bearing surfaces (22, 23) **shaped** and inter-engaging such that said bearing surfaces (22, 23) facilitate various angulations of the... ... vertebral bodies, and said plate and outer end of said fusion device having bearing surfaces **shaped** and inter-engaging such that said bearing surfaces facilitate various angulations of the plate relative...

12/3,K/7 (Item 7 from file: 350)

Derwent WPIX

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0009561743 *Drawing available*

WPI Acc no: 1999-508059/

XRPX Acc No: N1999-378607

**Dental implant system requiring minimal bone structure to mount dental prosthesis**

Patent Assignee: LIU C (LIUC-I)

Inventor: LIU C

Patent Family ( 1 patents, 1 countries )

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| US 5944526    | A    | 19990831 | US 1996597613      | A    | 19960206 | 199942 | B    |

Priority Applications (no., kind, date): US 1996597613 A 19960206

## Patent Details

| Patent Number | Kind | Lan | Pgs | Draw | Filing Notes |
|---------------|------|-----|-----|------|--------------|
|---------------|------|-----|-----|------|--------------|

**Alerting Abstract ...NOVELTY -** A saddle-shaped support has a shallow depression (114) at top center portion and two side walls (113a,113b). An anchor (116) having a **threaded hole** extending from the upper surface is positioned in the depression of the support. A cover...

**DESCRIPTION -** A nut is mounted on the anchor upper surface aligning with the **threaded hole** and an **opening** on the cover plate. A heating abutment or a crown abutment is fixed detachedly to... approximately 3 mm. The mating surfaces of the anchor and the support are spherical in **shape** for free orientation of the **threaded hole** axis. The support has a **hole** through which anchor extends. The cover plate extends from the sides of the anchor enclosing... as shallow drilling is required for seating support. Reduces cost of implanting as only conventional **tools** are used for fixing...

## Original Publication Data by Authority

### Original Abstracts:

The dental implant system includes a saddle-shaped support member that fits over the patient's jaw bone and has a shallow depression.... system is held in place by retaining wires that wrap around the patient's jaw **bone** and over the cover plate. The wires supply rigidity to the system. The anchor is threaded, such that a crown...

### Claims:

a patient's jaw, the system comprising: an anchor, having an upper surface and a **threaded hole** extending into the anchor from the upper surface; a saddle-shaped support member having two side walls separated by a top center portion, the top center... anchor within the shallow depression; and means for securing the cover plate and the saddle-shaped support member to the patient's jaw.

12/3,K/8 (Item 8 from file: 350)

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0008897668 *Drawing available*

WPI Acc no: 1998-446887/199838

Related WPI Acc No: 1998-446890; 2002-664778

XRPX Acc No: N1998-348370

**Automatic anterior cervical plating system for fusing human spine - has length sufficient to span adjacent cervical vertebrae with pair of bone screw receiving holes extending through the plate, and bone screw receiving holes associated**

Patent Assignee: MICHAELSON G K (MICH-I); MICHELSON G K (MICH-I); SDGI HOLDINGS INC (SDGI-N); SULZER SPINE-TECH LTD (SULZ); ZIMMER SPINE INC (ZIMM-N)

Inventor: MICHELSON G K; MITCHELSON G K

Patent Family ( 65 patents, 80 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| WO 1998034553  | A1   | 19980813 | WO 1998US2212      | A    | 19980211 | 199838 | B    |
| AU 199862687   | A    | 19980826 | AU 199862687       | A    | 19980211 | 199902 | E    |
| EP 1006913     | A1   | 20000614 | EP 1998904937      | A    | 19980211 | 200033 | E    |
|                |      |          | WO 1998US2212      | A    | 19980211 |        |      |
| US 6193721     | B1   | 20010227 | US 199737139       | P    | 19970211 | 200114 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
| US 20020045896 | A1   | 20020418 | US 199737139       | P    | 19970211 | 200228 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2001754733      | A    | 20010104 |        |      |
| US 6383186     | B1   | 20020507 | US 199737139       | P    | 19970211 | 200235 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2000669912      | A    | 20000926 |        |      |
| JP 2002515799  | W    | 20020528 | JP 1998534884      | A    | 19980211 | 200238 | E    |
|                |      |          | WO 1998US2212      | A    | 19980211 |        |      |
| US 6398783     | B1   | 20020604 | US 199737139       | P    | 19970211 | 200242 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2000618038      | A    | 20000717 |        |      |
| US 6416528     | B1   | 20020709 | US 199737139       | P    | 19970211 | 200253 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2000618035      | A    | 20000717 |        |      |
| US 6454771     | B1   | 20020924 | US 199737139       | P    | 19970211 | 200266 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2001754733      | A    | 20010104 |        |      |
| US 20030018335 | A1   | 20030123 | US 199737139       | P    | 19970211 | 200310 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2001754733      | A    | 20010104 |        |      |
|                |      |          | US 2002253678      | A    | 20020924 |        |      |
| US 20030045880 | A1   | 20030306 | US 199737139       | P    | 19970211 | 200320 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2001754733      | A    | 20010104 |        |      |
|                |      |          | US 2002253674      | A    | 20020924 |        |      |
| US 6527776     | B1   | 20030304 | US 199737139       | P    | 19970211 | 200320 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2000618157      | A    | 20000717 |        |      |
| US 6592586     | B1   | 20030715 | US 199737139       | P    | 19970211 | 200348 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2000618566      | A    | 20000717 |        |      |
| US 6616666     | B1   | 20030909 | US 199737139       | P    | 19970211 | 200361 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2000618039      | A    | 20000717 |        |      |
| US 6620163     | B1   | 20030916 | US 199737139       | P    | 19970211 | 200362 | E    |
|                |      |          | US 199822293       | A    | 19980211 |        |      |
|                |      |          | US 2000618036      | A    | 20000717 |        |      |

|                |    |          |               |   |          |        |   |
|----------------|----|----------|---------------|---|----------|--------|---|
| US 20030181912 | A1 | 20030925 | US 199822293  | A | 19980211 | 200364 | E |
|                |    |          | US 2000618036 | A | 20000717 |        |   |
|                |    |          | US 2003386275 | A | 20030311 |        |   |
| US 20030191471 | A1 | 20031009 | US 199822293  | A | 19980211 | 200367 | E |

|                |    |          |               |   |          |        |   |
|----------------|----|----------|---------------|---|----------|--------|---|
|                |    |          | US 2000618036 | A | 20000717 |        |   |
|                |    |          | US 2003386275 | A | 20030311 |        |   |
|                |    |          | US 2003409805 | A | 20030409 |        |   |
| US 20030191472 | A1 | 20031009 | US 199822293  | A | 19980211 | 200367 | E |
|                |    |          | US 2000618036 | A | 20000717 |        |   |
|                |    |          | US 2003386275 | A | 20030311 |        |   |
|                |    |          | US 2003410902 | A | 20030410 |        |   |
| CA 2444222     | A1 | 19980813 | CA 2279936    | A | 19980211 | 200401 | E |
|                |    |          | CA 2444222    | A | 19980211 |        |   |
| CA 2444226     | A1 | 19980813 | CA 2279936    | A | 19980211 | 200401 | E |
|                |    |          | CA 2444226    | A | 19980211 |        |   |
| CA 2444232     | A1 | 19980813 | CA 2279936    | A | 19980211 | 200401 | E |
|                |    |          | CA 2444232    | A | 19980211 |        |   |
| CA 2445299     | A1 | 19980813 | CA 2279936    | A | 19980211 | 200403 | E |
|                |    |          | CA 2445299    | A | 19980211 |        |   |
| CA 2445303     | A1 | 19980813 | CA 2279936    | A | 19980211 | 200403 | E |
|                |    |          | CA 2445303    | A | 19980211 |        |   |
| CA 2445319     | A1 | 19980813 | CA 2279936    | A | 19980211 | 200403 | E |
|                |    |          | CA 2445319    | A | 19980211 |        |   |
| EP 1393687     | A2 | 20040303 | EP 1998904937 | A | 19980211 | 200417 | E |
|                |    |          | EP 200328649  | A | 19980211 |        |   |
| EP 1393688     | A2 | 20040303 | EP 1998904937 | A | 19980211 | 200417 | E |
|                |    |          | EP 200328650  | A | 19980211 |        |   |
| EP 1393689     | A2 | 20040303 | EP 1998904937 | A | 19980211 | 200417 | E |
|                |    |          | EP 200328651  | A | 19980211 |        |   |
| US 6712818     | B1 | 20040330 | US 199737139  | P | 19970211 | 200423 | E |
|                |    |          | US 199822293  | A | 19980211 |        |   |
|                |    |          | US 2000618048 | A | 20000717 |        |   |
| EP 1402832     | A2 | 20040331 | EP 1998904937 | A | 19980211 | 200424 | E |
|                |    |          | EP 200328960  | A | 19980211 |        |   |
| EP 1402833     | A2 | 20040331 | EP 1998904937 | A | 19980211 | 200424 | E |
|                |    |          | EP 200328961  | A | 19980211 |        |   |
| EP 1402834     | A2 | 20040331 | EP 1998904937 | A | 19980211 | 200424 | E |
|                |    |          | EP 200328962  | A | 19980211 |        |   |
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|  |  |  |  | Related to application | EP 200328960 |
|  |  |  |  | Related to application | EP 200328961 |
|  |  |  |  | Related to patent      | EP 1393687   |
|  |  |  |  | Related to patent      | EP 1393688   |
|  |  |  |  | Related to patent      | EP 1393689   |
|  |  |  |  | Related to patent      | EP 1402832   |

|  |   |    |    |                             |               |
|--|---|----|----|-----------------------------|---------------|
|  |   |    |    | Related to patent           | EP 1402833    |
|  |   |    |    | Based on OPI patent         | WO 1998034553 |
| Regional<br>Designated<br>States, Original | AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE |    |    |                             |               |
| DE 69832389                                | E   | DE |    | Application                 | EP 1998904937 |
|  |   |    |    | PCT Application             | WO 1998US2212 |
|  |   |    |    | Based on OPI patent         | EP 1006913    |
|  |   |    |    | Based on OPI patent         | WO 1998034553 |
| EP 1006913                                 | B8  | EN |    | PCT Application             | WO 1998US2212 |
|  |   |    |    | Related to application      | EP 200328649  |
|  |   |    |    | Related to application      | EP 200328650  |
|  |   |    |    | Related to application      | EP 200328651  |
|  |   |    |    | Related to application      | EP 200328960  |
|  |   |    |    | Related to application      | EP 200328961  |
|  |   |    |    | Related to patent           | EP 1393687    |
|  |   |    |    | Related to patent           | EP 1393688    |
|  |   |    |    | Related to patent           | EP 1393689    |
|  |   |    |    | Related to patent           | EP 1402832    |
|  |   |    |    | Related to patent           | EP 1402833    |
|  |   |    |    | Based on OPI patent         | WO 1998034553 |
| Regional<br>Designated<br>States, Original | AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE |    |    |                             |               |
| CA 2445299                                 | C   | EN |    | Division of application     | CA 2279936    |
| JP 2006075618                              | A   | JA | 44 | Division of application     | JP 1998534884 |
| CA 2533689                                 | A1  | EN |    | Division of application     | CA 2444222    |
| CA 2533695                                 | A1  | EN |    | Division of application     | CA 2444222    |
| CA 2533699                                 | A1  | EN |    | Division of application     | CA 2444222    |
| CA 2533713                                 | A1  | EN |    | Division of application     | CA 2444222    |
| CA 2444232                                 | C   | EN |    | Division of application     | CA 2279936    |
| CA 2444222                                 | C   | EN |    | Division of application     | CA 2279936    |
| JP 2006116349                              | A   | JA | 43 | Division of application     | JP 1998534884 |
| ES 2253809                                 | T3  | ES |    | Application                 | EP 1998904937 |
|  |   |    |    | Based on OPI patent         | EP 1006913    |
| CA 2444226                                 | C   | EN |    | Division of application     | CA 2279936    |
| US 7074221                                 | B2  | EN |    | Related to Provisional      | US 199737139  |
|  |   |    |    | Continuation of application | US 199822293  |
|  |   |    |    | Division of application     | US 2001754733 |
|  |   |    |    | Continuation of patent      | US 6193721    |

|             |    |    |  |                     |               |
|-------------|----|----|--|---------------------|---------------|
|             |    |    |  | Division of patent  | US 6454771    |
| DE 69832389 | T2 | DE |  | Application         | EP 1998904937 |
|             |    |    |  | PCT Application     | WO 1998US2212 |
|             |    |    |  | Based on OPI patent | EP 1006913    |

|  |   |    |  |                         |               |
|--|---|----|--|-------------------------|---------------|
|  |   |    |  | Based on OPI patent     | WO 1998034553 |
| EP 1402836                                 | B1  | EN |  | Division of application | EP 1998904937 |
|  |   |    |  | Division of patent      | EP 1006913    |
| Regional<br>Designated<br>States, Original | AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE |    |  |                         |               |
| EP 1690508                                 | A2  | EN |  | Division of application | EP 1998904937 |
|  |   |    |  | Division of application | EP 200328962  |
|  |   |    |  | Division of patent      | EP 1006913    |
|  |   |    |  | Division of patent      | EP 1402834    |
| Regional<br>Designated<br>States, Original | AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE |    |  |                         |               |
| DE 69835244                                | E   | DE |  | Application             | EP 200328964  |
|  |   |    |  | Based on OPI patent     | EP 1402836    |

**to span adjacent cervical vertebrae with pair of bone screw receiving holes extending through the plate, and bone screw receiving holes associated ...**

**Original Titles:**

**Bone plate having a portion adapted to overlie a fastener**

**Alerting Abstract** ...least two adjacent cervical vertebrae, and an upper surface opposite to the lower surface. The plate has a first pair of **bone** screw (30) receiving holes (12) associated with a first of the adjacent cervical vertebrae, and...

## **Original Publication Data by Authority**

### **Original Abstracts:**

This invention is anatomically contoured anterior cervical plates (2) with **bone** ingrowth surfaces, providing for intersegmental compressive pre-loading, and a rigid and locked interface to... ... This invention is anatomically contoured anterior cervical plates (2) with **bone** ingrowth surfaces, providing for intersegmental compressive pre-loading, and a rigid and locked interface to... ... This invention is anatomically contoured anterior cervical plates (2) with **bone** ingrowth surfaces, providing for intersegmental compressive pre-loading, and a rigid and locked interface to... ... This invention is anatomically contoured anterior cervical plates (2) with **bone** ingrowth surfaces, providing for intersegmental compressive pre-loading, and a rigid and locked interface to... ... holes to a final position that is adapted to retain at least two of said **bone** screws to said plates.

... ... This invention is anatomically contoured anterior cervical plates (2) with **bone** ingrowth surfaces, providing for intersegmental compressive pre-loading, and a rigid and locked interface to... ... Said plate system comprising:

a plurality of locking elements each adapted to lock to said **plate** only one each of said **bone** screws inserted into one bone screw receiving holes, said locking elements each adapted to coaxially... ... This invention is anatomically contoured anterior cervical **plates** (2) with **bone** ingrowth surfaces, providing for intersegmental compressive pre-loading, and a rigid and locked interface to... ... This invention is anatomically contoured anterior cervical **plates** (2) with **bone** ingrowth surfaces, providing for intersegmental compressive pre-loading, and a rigid and locked interface to... ... pairs.

Said plates comprising:

**plate.** Methods for spinal compression and **bone** hole preparation are provided.... .... Anatomically contoured anterior cervical plates with **bone** ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all.... .... plate holders, a compression apparatus and a pilot hole forming device that interlocks with the **plate**. Methods for spinal compression and **bone** hole preparation are provided.... .... Anatomically contoured anterior cervical plates with **bone** ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all.... .... plate holders, a compression apparatus and a pilot hole forming device that interlocks with the **plate**. Methods for spinal compression and **bone** hole preparation are provided.... .... Anatomically contoured anterior cervical plates with **bone** ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all.... .... plate holders, a compression apparatus and a pilot hole forming device that interlocks with the **plate**. Methods for spinal compression and **bone** hole preparation are provided.... .... Anatomically contoured anterior cervical plates with **bone** ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all.... .... plate holders, a compression apparatus and a pilot hole forming device that interlocks with the **plate**. Methods for spinal compression and **bone** hole preparation are provided.... .... Anatomically contoured anterior cervical plates with **bone** ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all.... .... plate holders, a compression apparatus and a pilot hole forming device that interlocks with the **plate**. Methods for spinal compression and **bone** hole preparation are provided.... .... Anatomically contoured anterior cervical plates with **bone** ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all.... .... plate holders, a compression apparatus and a pilot hole forming device that interlocks with the **plate**. Methods for spinal compression and **bone** hole preparation are provided.... .... Anatomically contoured anterior cervical plates with **bone** ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all.... .... plate holders, a compression apparatus and a pilot hole forming device that interlocks with the **plate**. Methods for spinal compression and **bone** hole preparation are provided.... .... Anatomically contoured anterior cervical plates with **bone** ingrowth surfaces, providing for intersegmental compressive pre-loading, and a rigid .

and locked interface to

...  
**Claims:**

said lower surface being concave along a substantial portion of the longitudinal axis of said **plate**; b) at least two **bone** screws each having a central longitudinal axis and being adapted to engage each of the... ... screw receiving holes having a central longitudinal axis and being adapted to receive one of said **bone** screws to attach said **plate** to the cervical spine; andd) at least one locking element, each of said at least one locking element adapted to lock to said **plate** only one of said **bone** screws inserted in one of said bone screw receiving holes, each of said at least.... ... of a respective one of said bone screws so as to retain one of said **bone** screws to said **plate**.

.... the cervical vertebral body to attach said plate to the cervical spine; andb) a **bone** screw adapted to attach said **plate** to the cervical vertebral body, said bone screw comprising:b1) a head adapted to block further forward motion of said screw through said **bone** screw receiving hole of said **plate**;b2) a tip for insertion into the cervical vertebral body;b3) a shaft between said.... ... said lower surface, each of said bone screw receiving holes being adapted to receive a **bone** screw for engaging said **plate** to the spine; andc) a locking element being in slidable relationship to said **plate** for locking at least three **bone** screws inserted in said at least three bone screw receiving holes, respectively.... ... said lower surface being concave along a substantial portion of the longitudinal axis of said **plate**;b) at least two **bone** screws each having a central longitudinal axis and being adapted to engage each of the... ... receiving holes having a central longitudinal axis and being adapted to receive one of said **bone** screws to attach said **plate** to the vertebral bodies; andd) a plurality of locking elements each adapted to lock to said **plate** only one each of said **bone** screws inserted into one each of said bone screw receiving holes, said locking elements each adapted... ... one each of said bone screws so as to retain said respective one of said **bone** screws to said **plate**, said locking elements each having an outer perimeter contacting at least a portion of the... ... contacting the cervical vertebral bodies and an upper surface opposite to said lower surface, said **plate** having a plurality of **bone** screw receiving holes extending through said plate from said upper surface to said lower surface.... ... receiving holes having a central longitudinal axis and being adapted to receive one of said **bone** screws to attach said **plate** to the cervical spine; andd) a plurality of locking elements each adapted to lock to said **plate** only one each of said **bone** screws inserted in one each of said bone screw receiving holes, said locking elements each... ... of only one of said bone screws so as to retain said one of said **bone** screws to said **plate**, said locking element contacting said contact surface without penetrating said bone screw.... ... said lower surface being concave along a substantial portion of the longitudinal axis of said **plate**;b) at least two **bone** screw receiving holes extending through said plate from said upper surface through said lower surface.... ... vertebral bodies, each of said bone screw receiving holes being adapted to receive a single **bone** screw to attach said **plate** to the cervical spine; andc) at least one locking element, each of said at least one locking element adapted to lock to said **plate** only a single **bone** screw inserted in one of said at least two bone screw receiving holes, said locking... ... said lower surface being concave along a substantial portion of the longitudinal axis of said **plate**;at least two **bone** screws (170) each having a central longitudinal axis and being adapted to engage each of.... ... contacting the cervical vertebral bodies and an upper surface opposite to said lower surface, said **plate** having a plurality of **bone** screw receiving holes (6, 8, 408, 980) extending through said plate from said upper surface.... ... for contacting the cervical vertebrae and an upper surface opposite to said lower surface, said **plate** having a plurality of **bone** screw receiving holes extending through said plate from said upper surface to said lower surface.... ... for contacting the cervical vertebrae and an upper surface opposite to said lower surface, said **plate** having a plurality of **bone** screw receiving holes extending through said plate from said upper surface to said lower surface.... ... for contacting the cervical vertebrae and an upper surface opposite to said lower surface, said **plate** having a plurality of **bone** screw receiving holes extending through said plate from said upper surface to said lower surface.... ... engaging the cervical vertebral body to attach said plate to the cervical spine; anda **bone** screw adapted to attach said **plate** to the cervical vertebral body, said bone screw comprising:a leading end for insertion into.... ... longitudinal axis;a head adapted to block further forward motion of said screw through said **bone** screw receiving hole of said **plate**, said head having an upper portion and a lower portion, each of said upper and.... ... said lower surface being concave along a substantial portion of the longitudinal axis of said **plate**;at least two **bone** screw

receiving holes extending through said plate from said upper surface through said lower surface.... ... bone screw receiving holes having a central longitudinal axis and being adapted to receive a **bone** screw to attach said **plate** to the cervical spine; anda lock for preventing the inadvertent backing out of the screws from within said bone screw receiving holes, said lock having a **threaded** shaft member with a longitudinal axis and a cover portion adapted to cover at least... ... said lower surface being concave along a substantial portion of the longitudinal axis of said **plate**;at least two **bone** screw receiving holes extending through said plate from said upper surface through said lower surface.... ... lock being adapted to engage said plate and being adapted to retain at least two **bone** screws to said **plate** when said length of said elongated segment is generally transverse to the longitudinal axis of.... ... What is claimed is:1. An orthopedic device comprising:a **bone plate** having at least one opening therethrough and formed of a polymeric material;a fastener comprising a first end defining a head having a surface configured to engage a drive **tool** and an opposite, second end defining a tissue engaging portion, said fastener disposed within the at least one opening wherein a portion of the **bone plate** overlays a portion of said surface and the tissue engaging portion projects therefrom.... ... is:1. A plating apparatus for the spine, comprising:a plate having a generally triangular shape with an upper node positionable along an upper vertebra and a pair of lower nodes.... ... said lower surface being concave along a substantial portion of the longitudinal axis of said **plate**;at least two **bone** screw receiving holes extending through said plate from said upper surface through said lower surface.... ... bone screw receiving holes having a central longitudinal axis and being adapted to receive a **bone** screw to attach said **plate** to the cervical spine; anda lock for preventing the inadvertent backing out of the screws from within said bone screw receiving holes, said lock having a **threaded** shaft member with a longitudinal axis and a cover portion adapted to cover only a.... ... contacting the cervical vertebral bodies and an upper surface opposite to said lower surface, said **plate** having a plurality of **bone** screw receiving holes extending through said plate from said upper surface to said lower surface.... ... a plate having a longitudinal axis and a length sufficient to span at least two

**bone** portions, said **plate** having an upper surface and a lower surface for placement against the bone portions, said... ... one of flat and convex along a substantial portion of the longitudinal axis of said **plate**;at least two **bone** screws each having a central longitudinal axis and being adapted to engage each of the.... ... receiving holes having a central longitudinal axis and being adapted to receive one of said **bone** screws to attach said **plate** to the **bone** portions, each of said bone screw receiving holes and said bone screws being configured to.... ... with only one of said bone screw receiving holes and adapted to lock to said **plate** only one of said **bone** screws inserted into one of said bone screw receiving holes, said at least one locking... ... of said bone screw when inserted in said bone screw receiving hole to retain said **bone** screw to said **plate**.

.... said lower surface, each of said bone screw receiving holes being adapted to receive a **bone** screw for engaging said **plate** to the spine; anda locking element being in slidble relationship to said **plate** for locking at least three **bone** screws inserted in said at least three bone screw receiving holes, respectively.... ... and a lower end configured to cooperatively engage a bone screw receiving hole in a **bone plate**, said lower end having a reduced diameter portion, said reduced diameter portion being threaded, a.... ... rod into the vertebral body, said sharpened-end having sufficient length to pass through the **bone plate** and into the vertebral body to a predetermined depth less than the depth of the... receiving holes having a central longitudinal axis and being adapted to receive one of said **bone** screws to attach said **plate** to the cervical spine; anda plurality of locking elements each adapted to lock to said **plate** only one each of said **bone** screws inserted in one each of said bone screw receiving holes, said locking elements each.... ... of only one of said bone screws so as to retain said one of said **bone** screws to said **plate**, said locking element contacting said contact surface without penetrating said bone screw.... ... said lower surface, each of said bone screw receiving holes being adapted to receive a **bone** screw for engaging said **plate** to the cervical spine; and at least one end of said plate being configured to.... ... engaging the cervical vertebral body to attach said plate to the cervical spine; anda **bone** screw adapted to attach said **plate** to the cervical vertebral body, said bone screw comprising:a head adapted to block further forward motion of said screw through said **bone** screw receiving hole of

said plate; a tip for insertion into the cervical vertebral body; a shaft between said tip and... ... contact the two adjacent vertebral bodies across the disc space and having a plurality of **bone** screw receiving holes; positioning the **plate** against at least a portion of the anterior aspect of the vertebral bodies to align... ... and a radius, each of said bone screw receiving holes being adapted to receive a **bone** screw for engaging said **plate** to the cervical spine; and opposite first and second ends along the mid-longitudinal axis... ... upper surface through said lower surface on each side of the longitudinal axis of said **plate**, each of said **bone** screw receiving holes being adapted to receive a bone screw having a longitudinal axis so... ... inserted in said bone screw receiving holes, said lock being adapted to couple to said **plate** to retain at least two **bone** screws to said **plate**.

... ... bone screw receiving holes having a central longitudinal axis and being adapted to receive a **bone** screw to attach said **plate** to the cervical spine; and a lock for preventing the inadvertent backing out of the screws from within said bone screw receiving **holes**, said lock having a **threaded** shaft member with a longitudinal axis and a cover portion adapted to cover at least... ... said lower surface being concave along a substantial portion of the longitudinal axis of said **plate**; at least two **bone** screw receiving holes extending through said **plate** from said upper surface through said lower surface... ... lock being adapted to engage said **plate** and being adapted to retain at least two **bone** screws to said **plate** when said length of said elongated segment is generally transverse to the longitudinal axis of... ... engaging the cervical vertebral body to attach said **plate** to the cervical spine; and a **bone** screw adapted to attach said **plate** to the cervical vertebral body, said bone screw comprising: a leading end for insertion into... ... longitudinal axis; a head adapted to block further forward motion of said screw through said **bone** screw receiving hole of said **plate**, said head being configured not to substantially protrude beyond said bone screw receiving hole when... ... vertebral bodies, and an upper surface opposite said lower surface, said lower surface of said **plate** being configured to promote **bone** growth along and into said lower surface from vertebral body to vertebral body; and at

12/3,K/9 (Item 9 from file: 350)

Derwent WPIX

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0005786856 *Drawing available*

WPI Acc no: 1992-009012/199202

XRAM Acc no: C1992-003863

XRPX Acc No: N1992-006925

**Valve for engine oil filter with reliable sealing - has valve body cooperating with valve plate and spring supported on valve cover**

Patent Assignee: FILTERWERK MANN & HUMMEL GMBH (FILW)

Inventor: BAUER S; HABIGER H; MACK K; PAVLIN J

Patent Family ( 8 patents, 9 countries )

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| EP 463289     | A    | 19920102 | EP 1991102307      | A    | 19910219 | 199202 | B    |
| BR 199102572  | A    | 19920121 |                    |      |          | 199208 | E    |
| US 5193579    | A    | 19930316 | US 1991718418      | A    | 19910624 | 199313 | E    |
| US 5271429    | A    | 19931221 | US 1991718418      | A    | 19910624 | 199351 | E    |
|               |      |          | US 1992945410      | A    | 19921006 |        |      |
| EP 463289     | B1   | 19950125 | EP 1991102307      | A    | 19910219 | 199508 | E    |

|             |    |          |               |   |          |        |   |
|-------------|----|----------|---------------|---|----------|--------|---|
| DE 59104371 | G  | 19950309 | DE 59104371   | A | 19910219 | 199515 | E |
|             |    |          | EP 1991102307 | A | 19910219 |        |   |
| ES 2070353  | T3 | 19950601 | EP 1991102307 | A | 19910219 | 199528 | E |
| MX 192464   | B  | 19990623 | MX 246        | A | 19910530 | 200058 | E |

Priority Applications (no., kind, date): DE 10459 A 19900711; DE 7022 A 19900623; DE 194 A 19910109

#### Patent Details

| Patent Number                        | Kind                 | Lan | Pgs | Draw | Filing Notes            |               |
|--------------------------------------|----------------------|-----|-----|------|-------------------------|---------------|
| EP 463289                            | A                    | EN  |     |      |                         |               |
| Regional Designated States, Original | AT DE ES FR GB IT SE |     |     |      |                         |               |
| BR 199102572                         | A                    | PT  |     |      |                         |               |
| US 5193579                           | A                    | EN  | 8   | 6    |                         |               |
| US 5271429                           | A                    | EN  | 8   | 6    | Division of application | US 1991718418 |
|                                      |                      |     |     |      | Division of patent      | US 5193579    |
| EP 463289                            | B1                   | DE  | 11  | 6    |                         |               |
| Regional Designated States, Original | AT DE ES FR GB IT SE |     |     |      |                         |               |
| DE 59104371                          | G                    | DE  |     |      | Application             | EP 1991102307 |
|                                      |                      |     |     |      | Based on OPI patent     | EP 463289     |
| ES 2070353                           | T3                   | ES  |     |      | Application             | EP 1991102307 |
|                                      |                      |     |     |      | Based on OPI patent     | EP 463289     |

**Alerting Abstract** ...a peripheral flange (22) above which uniformly distributed peripheral recesses are provided; and the valve plate (11) has a blind **bone** (25) into which extends a cylindrical guide (24) provided at the top of the cover...

**Equivalent Alerting Abstract** ...The seat is a frustoconical surface which contacts a corresp. frustoconical surface of the body **opening**. There is a screw **thread** around the body for securing it in a fluid passageway and the plate has at... ...in the opening to guide the plate. The guide surfaces are pref. arranged in star **shape**, and there is a mounting **tool** receiving recess in the body opposite the crimped margin...

#### Original Publication Data by Authority

##### Claims:

surface which contacts a corresponding frustoconical surface of a central bore which defines said valve **opening** in said valve body; wherein a screw **thread** is arranged circumferentially around said cylindrical valve body for securing said valve body in a...

? t s12/2/all

12/2/1 (Item 1 from file: 350)

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0015961159 *Drawing available*

WPI Acc no: 2006-492827/200650

Related WPI Acc No: 2006-446308

XRPX Acc No: N2006-397821

**Fracture fixation plate shaping kit for surgical devices, has handle of specific size and shape for engaging with tubular elements removably coupled in threaded holes in bone plate**

Patent Assignee: CASTANEDA J E (CAST-I); KORTENBACH J A (KORT-I); ORBAY J L (ORBA-I)

Inventor: CASTANEDA J E; KORTENBACH J A; ORBAY J L

Basic Patent ( 1 patents, 1 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| US 20060161158 | A1   | 20060720 | US 200411917       | A    | 20041214 | 200650 | B    |
|                |      |          | US 2006384841      | A    | 20060320 |        |      |

Priority Applications (no., kind, date): US 200411917 A 20041214; US 2006384841 A 20060320

#### **Alerting Abstract US A1**

**NOVELTY - A shaping tool** has handle of specific size and **shape** for engaging with one of the tubular elements removably coupled in **threaded holes** (14) in a **bone plate** (10). Another **shaping tool** has handle and end sized and **shaped** to engage with other tubular elements.

**DESCRIPTION - INDEPENDENT CLAIMS** are also included for the following:

1. **shaping tool**; and

2. **plate shaping method**.

**USE - For surgical devices for implanting and shaping bone plates.**

**ADVANTAGE - The drilling of holes** in the bone in alignment with **threaded holes** in the **bone plate** is performed effectively.

**DESCRIPTION OF DRAWINGS - The figure shows the perspective view of the drill guide.**

**10 bone plate**

**12 holes**

**14 alignment holes**

**16 drill guide tip**

18 insertion tool  
22 circular opening

**Title Terms /Index Terms/Additional Words:** FRACTURE; FIX; PLATE; SHAPE; KIT; SURGICAL; DEVICE; HANDLE; SPECIFIC; SIZE; ENGAGE; TUBE; ELEMENT; REMOVE; COUPLE; THREAD; HOLE; BONE

**Class Codes**

International Patent Classification

| IPC          | Class Level | Scope | Position | Status | Version Date |  |
|--------------|-------------|-------|----------|--------|--------------|--|
| A61F-0002/30 | A           | I     | F        | B      | 20060101     |  |

US Classification, Issued: 606069000

File Segment: EngPI; ;  
DWPI Class: P32

12/2/2 (Item 2 from file: 350)

Derwent WPIX

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0014214010 *Drawing available*

WPI Acc no: 2004-399752/200437

Related WPI Acc No: 2004-399753; 2004-399754; 2004-399755; 2004-399761; 2005-295310

XRPX Acc No: N2004-318686

**Bone fixation used for support, movement, protection, storage of minerals in blood cells of human involves securing bone plate to second portion of bone while adjusting angular disposition of bone plate relative to two bone portions**

Patent Assignee: ACUMED LLC (ACUM-N); HUEBNER R J (HUEB-I)

Inventor: HORST S P; HUEBNER R J

Basic Patent ( 16 patents, 107 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| US 20040102775 | A1   | 20040527 | US 2002427908      | P    | 20021119 | 200437 | B    |
|                |      |          | US 2002427910      | P    | 20021119 |        |      |
|                |      |          | US 2003512111      | P    | 20031017 |        |      |
|                |      |          | US 2003512136      | P    | 20031017 |        |      |
|                |      |          | US 2003512322      | P    | 20031017 |        |      |
|                |      |          | US 2003512323      | P    | 20031017 |        |      |
|                |      |          | US 2003717015      | A    | 20031119 |        |      |

Priority Applications (no., kind, date): US 2003512323 P 20031017; US 2003512322 P 20031017; US 2003512136

P 20031017; US 2003512111 P 20031017; US 2002427910 P 20021119; US 2002427908 P 20021119; US 2003717015 A 20031119

National Designated States: AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA  
CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP  
KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL  
PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW NA  
Regional Designated States: AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB  
GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW  
NA PL AL LI LT LV MK

### **Alerting Abstract US A1**

**NOVELTY** - The method involves securing a **bone plate** (50) to a second portion of a bone while adjusting the angular disposition of **bone plate** relative to the two portions of the bone.

**DESCRIPTION** - An INDEPENDENT CLAIM is also included for a **bone plate** for **bone fixation**.

**USE** - Used for support, movement, protection, storage of minerals and formation of blood cells of human.

**ADVANTAGE** - Ensure that the skeleton retains its functions, while reducing pain and disfigurement.

**DESCRIPTION OF DRAWINGS** - The figure is a volar view of the distal radius and the **bone plate**.

#### **50 Bone plate**

54 Distal anchor portion

74,76 Openings

82 Bone screw

**Title Terms /Index Terms/Additional Words:** BONE; FIX; SUPPORT; MOVEMENT; PROTECT; STORAGE; MINERAL; BLOOD; CELL; HUMAN; SECURE; PLATE; SECOND; PORTION; ADJUST; ANGULAR; DISPOSITION; RELATIVE; TWO

### **Class Codes**

International Patent Classification

| <b>IPC</b> | <b>Class Level</b> | <b>Scope</b> | <b>Position</b> | <b>Status</b> | <b>Version Date</b> |
|------------|--------------------|--------------|-----------------|---------------|---------------------|
|------------|--------------------|--------------|-----------------|---------------|---------------------|

|                          |   |   |      |   |             |
|--------------------------|---|---|------|---|-------------|
| A61B-017/56; A61B-017/58 |   |   | Main |   | "Version 7" |
| A61B-0017/17             | A | I |      | R | 20060101    |
| A61B-0017/58             | A | I | F    | B | 20060101    |
| A61B-0017/80             | A | I |      | R | 20060101    |
| A61B-0019/00             | A | N |      | R | 20060101    |
| A61F-0002/28             | A | I | L    | B | 20060101    |
| A61B-0017/16             | C | I |      | R | 20060101    |
| A61B-0017/68             | C | I |      | R | 20060101    |
| A61B-0019/00             | C | N |      | R | 20060101    |

US Classification, Issued: 606069000

File Segment: EngPI; ;

DWPI Class: P31; P32

12/2/3 (Item 3 from file: 350)

Derwent WPIX

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0013392209 *Drawing available*

WPI Acc no: 2003-482186/200345

XRAM Acc no: C2003-128914

XRPX Acc No: N2003-383474

**Plate for osteosynthesis has elongate shape body provided with holes for passage of corresponding screws for fixing to bone, and reduced section defining intermediate point of greater flexibility**

Patent Assignee: BIOTEK SRL (BIOT-N); DEL MEDICO N (DMED-I); VESE S (VESE-I)

Inventor: DEL MEDICO N

Basic Patent ( 6 patents, 99 countries )

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| WO 2003039384 | A1   | 20030515 | WO 2002IB3742      | A    | 20020911 | 200345 | B    |

Priority Applications (no., kind, date): IT 2001TO1059 A 20011109

National Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH

CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG  
KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD  
SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

Regional Designated States: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH

GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW AL LI LT LV  
MK RO SI

#### **Alerting Abstract WO A1**

**NOVELTY** - An osteosynthesis plate has an elongate **shape** body (2) provided with holes for the passage of corresponding screws (6) for fixing to a bone (4), and has a reduced section having a cross-sectional area smaller than that of the body to define an intermediate point (10) of greater flexibility. The reduced section is provided with a mechanism (12) to constrain the mobile portion to the elongate body.

**DESCRIPTION** - An osteosynthesis plate has an elongate **shape** body provided with holes for the passage of corresponding screws for fixing to a bone. It has a reduced section having a cross-sectional area smaller than that of the body to define an intermediate point of greater flexibility.

The reduced section is coupled with a mobile portion of the complementary **shape** provided with a mechanism to constrain the mobile portion to the elongate body to decrease the flexibility of the intermediate point.

**USE** - Used as plate for osteosynthesis.

**ADVANTAGE** - The inventive plate can be manufactured in different **shapes** and sizes to suit different types of bones and fractures. The screw allows varying of flexibility of the plate.

**DESCRIPTION OF DRAWINGS** - The figure is a perspective view of plate for osteosynthesis applied to the fractured bone.

2 Body

4 Bone  
6 Screws  
10 Intermediate point  
12 Mechanism

**Title Terms /Index Terms/Additional Words:** PLATE; OSTEOSYNTHESIS ; ELONGATE; **SHAPE**; BODY; HOLE; PASSAGE; CORRESPOND; SCREW; FIX; BONE ; REDUCE; SECTION; DEFINE; INTERMEDIATE; POINT; GREATER; FLEXIBLE

### Class Codes

#### International Patent Classification

| IPC                                      | Class Level | Scope | Position  | Status | Version Date |
|--|-------------|-------|-----------|--------|--------------|
| A61B-017/00; A61B-017/80;<br>A61F-002/30 |             |       | Main      |        | "Version 7"  |
| A61B-017/56                              |             |       | Secondary |        | "Version 7"  |

US Classification, Issued: 606069000

File Segment: CPI; EngPI

DWPI Class: A96; D22; P31; P32

Manual Codes (CPI/A-N): A04-E08; A12-V02; D09-C01

Specific Compound Numbers: R00975

Derwent Chemistry Resource Numbers: (Linked) 104333-DIS; 104333

#### Key Word Indexing

\*1\* 104333-DIS

#### Polymer Indexing

(01)

\*001\* 018; G0022 D01 D12 D10 D51 D53 D59 D69 D82 F- 7A R00975-R 104333-R;  
H0000; P0511  
\*002\* 018; ND01; K9416; Q9999 Q8048 Q7987; K9483-R; K9676-R

12/2/4 (Item 4 from file: 350)

Derwent WPIX

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0010766599 *Drawing available*

WPI Acc no: 2001-380698/200140

XRPX Acc No: N2001-279113

**Self-drilling and tapping multi-drive bone screw for rigid fixation of craniomaxillofacial tissue grafts and bone plates includes tip which incorporates twist drill shaft with sharp cutting point tip**

Patent Assignee: BALFOUR A R (BALF-I); CARCHIDI J E (CARC-I)

Inventor: BALFOUR A R; CARCHIDI J E

Basic Patent ( 2 patents, 1 countries )

| Patent Number  | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|----------------|------|----------|--------------------|------|----------|--------|------|
| US 20010004694 | A1   | 20010621 | US 199881605       | P    | 19980414 | 200140 | B    |
|                |      |          | US 1999290433      | A    | 19990413 |        |      |

Priority Applications (no., kind, date): US 199881605 P 19980414; US 1999290433 A 19990413

#### **Alerting Abstract US A1**

**NOVELTY** - The bone screw (10) has tip (12a) which incorporates a twist drill shaft with a sharp cutting point tip (12b) to pierce and drill pilot hole and prepare for the insertion of self-tapping screw threads (12c). The cylindrical dome shaped head (14) allow rigid fixation of craniomaxillofacial tissue grafts and geometrically sized bone plates is formed on the screw distal to the drilling and tapping features.

**DESCRIPTION** - A spline feature (14e) is incorporated into the cylindrically dome shaped head for easy pickup, assembly and insertion of the bone screw with a corresponding spline driver tool (20). The spline driver feature also allows the bone screw (10) to be driven with either a standard square or cross blade driver tool. An INDEPENDENT CLAIM includes a driving tool.

**USE** - Bone screw for rigid fixation of craniomaxillofacial tissue grafts and bone plates.

**ADVANTAGE** - The screw minimizes the surgical steps and maximizes fixation.

**DESCRIPTION OF DRAWINGS** - The figure shows front elevational view, partly in cross section, of a self-drilling and self-tapping bone screw.

10 Bone screw

12a Tip

12b Sharp cutting point tip

12c Self-tapping screw threads

14 Cylindrical dome shaped head

14e Spline feature

20 Spline driver tool

**Title Terms /Index Terms/Additional Words:** SELF; DRILL; TAP; MULTI; DRIVE; BONE; SCREW; RIGID; FIX; TISSUE; GRAFT; PLATE; TIP; INCORPORATE; TWIST; SHAFT; SHARP; CUT; POINT

#### **Class Codes**

International Patent Classification

| IPC | Class Level | Scope | Position | Status | Version Date |
|-----|-------------|-------|----------|--------|--------------|
|     |             |       |          |        |              |

|                          |  |  |      |  |             |
|--------------------------|--|--|------|--|-------------|
| A61B-017/56; A61B-017/58 |  |  | Main |  | "Version 7" |
|--------------------------|--|--|------|--|-------------|

US Classification, Issued: 606073000, 606104000, 606073000, 411387000

File Segment: EngPI; ;

DWPI Class: P31

12/2/5 (Item 5 from file: 350)

Derwent WPIX

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0010587519 *Drawing available*

WPI Acc no: 2001-192605/200120

XRPX Acc No: N2001-136919

**Instruments for implanting tendon incorporate button with openings in for fixture filaments, outer aperture of bone-duct and plate shaped body**

Patent Assignee: SAUER M (SAUE-I); STORZ GMBH & CO KARL (STOR-N); STORZ GMBH & CO KG KARL (STOR-N); STROBEL M (STRO-I)

Inventor: SAUER M; STROBEL M

Basic Patent ( 7 patents, 25 countries )

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| DE 19941574   | A1   | 20010308 | DE 19941574        | A    | 19990901 | 200120 | B    |

Priority Applications (no., kind, date): DE 19941574 A 19990901

National Designated States: US

Regional Designated States: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC

NL PT SE AL LI LT LV MK RO SI

#### Alerting Abstract DE A1

**NOVELTY** - A button (40) is placed on the outer aperture (33) of a bone-duct (32) containing the replacement tendon (16). The button has **openings** (58,60) through which are **threaded** the fixture filaments (36-39) of the replacement tendon. A center protuberance in the form of a cylindrical pin-shaped neck (50) fits into the aperture in a matching recess in the bone-duct when the button is placed on it. The button has a **plate-shaped body** (46) which has edges against which a **tool** can be placed for turning the button.

**USE** - Instruments for implanting replacement tendon, especially replacement crucial ligament

**ADVANTAGE** - The replacement tendon is easily and securely implanted.

**DESCRIPTION OF DRAWINGS** - The drawing shows a button placed against the **aperture** of a bone-duct, with four fixture filaments **threaded** through **openings**.

16 Tendon

32 Bone-duct

33 Outer aperture  
 36-39 Filaments  
 46 Body  
 50 Neck  
 58,60 Openings

**Title Terms /Index Terms/Additional Words:** INSTRUMENT; IMPLANT; TENDON; INCORPORATE; BUTTON; OPEN; FIX; FILAMENT; OUTER; APERTURE; BONE; DUCT; PLATE; SHAPE; BODY

### Class Codes

#### International Patent Classification

| IPC                      | Class Level | Scope | Position  | Status | Version Date |
|--------------------------|-------------|-------|-----------|--------|--------------|
| A61B-017/04; A61F-002/08 |             |       | Main      |        | "Version 7"  |
| A61B-017/00; A61B-017/17 |             |       | Secondary |        | "Version 7"  |

US Classification, Issued: 623013140, 606232000, 606072000, 606103000

File Segment: EngPI; ;

DWPI Class: P31; P32

12/2/6 (Item 6 from file: 350)

Derwent WPIX

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0010069809 *Drawing available*

WPI Acc no: 2000-375827/200032

XRPX Acc No: N2000-282289

**Inter-body fusion cage-plate fixation assembly for spinal surgery procedures comprises cage which is implanted between two vertebral bodies with attachment plate and fastener connecting plate**

Patent Assignee: SDGI HOLDINGS INC (SDGI-N)

Inventor: JOSSE L; LEHUEC J; LEHUEC J C; LIU M

Basic Patent ( 9 patents, 88 countries )

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| WO 2000024343 | A1   | 20000504 | WO 1999US25164     | A    | 19991027 | 200032 | B    |

Priority Applications (no., kind, date): US 1998181362 A 19981028

National Designated States: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR

CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

Regional Designated States: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE  
IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW LI

### Alerting Abstract WO A1

**NOVELTY** - The inter-body fusion cage (12) has an externally threaded stem (19) projecting from a domed outer end (22). A contoured plate (11) is provided with an **aperture** that may be received on the stem. The stem **threads** receive a nut (21) to fix the **plate** to the **cage**. **Bone** screws anchor the **plate** to vertebral bodies (13,14). A hemispherical surface accommodates universal angulation of the plate relative to the cage.

**DESCRIPTION** - An INDEPENDENT CLAIMS is also included for a **tool** assembly.

**USE** - For use as anterior lateral spinal cage-plate fixation device.

**ADVANTAGE** - Provides stable construct, and enables endoscopic procedures to be utilized.

**DESCRIPTION OF DRAWINGS** - The drawing shows a cross-sectional view of the assembly.

11 Contoured plate

12 Fusion cage

13,14 Vertebral bodies

19 Threaded stem

21 Nut

22 Domed outer end

**Title Terms /Index Terms/Additional Words:** INTER; BODY; FUSE; CAGE; PLATE; FIX; ASSEMBLE; SPINE; SURGICAL; PROCEDURE; COMPRISE; IMPLANT; TWO; VERTEBRA; ATTACH; FASTEN; CONNECT

### Class Codes

#### International Patent Classification

| IPC                      | Class Level | Scope | Position  | Status   | Version Date |
|--------------------------|-------------|-------|-----------|----------|--------------|
| A61B-017/56; A61F-002/44 |             |       | Main      |          | "Version 7"  |
| A61B-017/58              |             |       | Secondary |          | "Version 7"  |
| A61B-0017/70             | A           | N     | R         | 20060101 |              |
| A61B-0017/86             | A           | N     | R         | 20060101 |              |
| A61F-0002/00             | A           | N     | R         | 20060101 |              |
| A61F-0002/02             | A           | N     | R         | 20060101 |              |
| A61F-0002/30             | A           | N     | R         | 20060101 |              |
| A61F-0002/44             | A           | I     | R         | 20060101 |              |
| A61F-0002/44             | A           | I     | F         | B        | 20060101     |
| A61F-0002/46             | A           | I     |           | R        | 20060101     |
| A61B-0017/68             | C           | N     | R         | 20060101 |              |
| A61B-0017/70             | C           | N     | R         | 20060101 |              |
| A61F-0002/00             | C           | N     | R         | 20060101 |              |
| A61F-0002/02             | C           | N     | R         | 20060101 |              |
| A61F-0002/30             | C           | N     | R         | 20060101 |              |
| A61F-0002/44             | C           | I     | R         | 20060101 |              |
| A61F-0002/46             | C           | I     | R         | 20060101 |              |

US Classification, Issued: 606061000, 606069000, 606072000

File Segment: EngPI; ;

DWPI Class: P31; P32

12/2/7 (Item 7 from file: 350)

Derwent WPIX

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0009561743 *Drawing available*

WPI Acc no: 1999-508059/

XRPX Acc No: N1999-378607

**Dental implant system requiring minimal bone structure to mount dental prosthesis**

Patent Assignee: LIU C (LIUC-I)

Inventor: LIU C

Basic Patent ( 1 patents, 1 countries )

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| US 5944526    | A    | 19990831 | US 1996597613      | A    | 19960206 | 199942 | B    |

Priority Applications (no., kind, date): US 1996597613 A 19960206

**Alerting Abstract US A**

**NOVELTY** - A saddle-shaped support has a shallow depression (114) at top center portion and two side walls (113a,113b). An anchor (116) having a **threaded hole** extending from the upper surface is positioned in the depression of the support. A cover plate (124) retains the anchor in the support. A pair of wires (128) secures the support and the cover plate to the patient's jaw.

**DESCRIPTION** - A nut is mounted on the anchor upper surface aligning with the **threaded hole** and an **opening** on the cover plate. A heating abutment or a crown abutment is fixed detachedly to the anchor by tightening a screw to the nut. The screw lower end does not extend through the support. The two wires are passed through grooves extending lengthwise across the cover plate top and the ends are twisted. The depth of the depression is approximately 3 mm. The mating surfaces of the anchor and the support are spherical in **shape** for free orientation of the **threaded hole** axis. The support has a **hole** through which anchor extends. The cover plate extends from the sides of the anchor enclosing the support. The anchor is free of interlocking engagement with the patient jaw. An **INDEPENDENT CLAIM** is also included for installation method of dental implant system in patient jaw.

**USE** - To mount dental prosthesis.

**ADVANTAGE** - Requires minimal base structure for mounting as shallow drilling is made on bone for fixing anchor with wire eliminating long screw structure. Results in less trauma to jaw bone and reduces risk of damaging mandibular nerve as shallow drilling is required for seating support. Reduces cost of implanting as only conventional **tools** are used for fixing.

**DESCRIPTION OF DRAWINGS** - The figure shows sectional view of jaw bone with dental implant system.

113a,113b Side walls

114 Shallow depression  
116 Anchor  
124 Cover plate  
128 Wires

**Title Terms /Index Terms/Additional Words:** DENTAL; IMPLANT; SYSTEM; REQUIRE; MINIMUM; BONE; STRUCTURE; MOUNT; PROSTHESIS

### Class Codes

#### International Patent Classification

| IPC         | Class Level | Scope | Position | Status | Version Date |
|-------------|-------------|-------|----------|--------|--------------|
| A61C-008/00 |             |       | Main     |        | "Version 7"  |

US Classification, Issued: 433176000

File Segment: EngPI; ;  
DWPI Class: P32

12/2/8 (Item 8 from file: 350)

Derwent WPIX

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0008897668 *Drawing available*

WPI Acc no: 1998-446887/199838

Related WPI Acc No: 1998-446890; 2002-664778

XRPX Acc No: N1998-348370

**Automatic anterior cervical plating system for fusing human spine - has length sufficient to span adjacent cervical vertebrae with pair of bone screw receiving holes extending through the plate, and bone screw receiving holes associated**

Patent Assignee: MICHAELSON G K (MICH-I); MICHELSON G K (MICH-I); SDGI HOLDINGS INC (SDGI-N); SULZER SPINE-TECH LTD (SULZ); ZIMMER SPINE INC (ZIMM-N)

Inventor: MICHELSON G K; MITCHELSON G K

Basic Patent ( 65 patents, 80 countries )

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| WO 1998034553 | A1   | 19980813 | WO 1998US2212      | A    | 19980211 | 199838 | B    |

Priority Applications (no., kind, date): US 2005110161 A 20050420; US 2004938376 A 20040911; US 2004883087 A 20040701; US 2004883086 A 20040701; US 2004802906 A 20040317; US 2003664776 A 20030917; US 2003410918 A 20030410; US 2003410902 A 20030410; US 2003409805 A 20030409; US 2003386275 A 20030311; US 2002253678 A 20020924; US 2002253674 A 20020924; US 200298991 A 20020315; US 2001754733 A 20010104; US 2000669912 A 20000926; US 2000618566 A 20000717; US 2000618157 A

20000717; US 2000618048 A 20000717; US 2000618039 A 20000717; US 2000618038 A 20000717; US 2000618036 A 20000717; US 2000618035 A 20000717; US 199822344 A 19980211; US 199737139 P 19970211; US 199822293 A 19980211

National Designated States: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM GW HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW

Regional Designated States: AT BE CH DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW LI AL LT LV MK RO SI

### **Alerting Abstract WO A1**

The plate (2) has a length sufficient to span at least two adjacent cervical vertebrae, and an upper surface opposite to the lower surface. The plate has a first pair of bone screw (30) receiving holes (12) associated with a first of the adjacent cervical vertebrae, and at least a second pair of bone screw receiving holes associated with a second of the adjacent cervical vertebrae.

The plate has a length longer than its width. The lower surface of the plate has a first concave curvature parallel to the length. The first concave curvature having a radius of curvature between approximately 20 to 24 cm. The lower surface and the second concave curvature transverse to the length parallel to the width.

**ADVANTAGE** - The vertebrae can be easily and reliably locked in place at the same time by a single operation, and allows for intersegmental compression of the spinal segment.

**Title Terms /Index Terms/Additional Words:** AUTOMATIC; ANTERIOR; CERVIX; PLATE; SYSTEM; FUSE; HUMAN; SPINE; LENGTH; SUFFICIENT; SPAN; ADJACENT; VERTEBRA; PAIR; BONE; SCREW; RECEIVE; HOLE; EXTEND; THROUGH; ASSOCIATE

### **Class Codes**

#### **International Patent Classification**

| <b>IPC</b>               | <b>Class Level</b> | <b>Scope</b> | <b>Position</b> | <b>Status</b> | <b>Version Date</b> |
|--------------------------|--------------------|--------------|-----------------|---------------|---------------------|
| A61B-017/58; A61B-017/70 |                    |              | Main            |               | "Version 7"         |
| A61B-0017/00             | A                  | N            |                 | R             | 20060101            |
| A61B-0017/16             | A                  | I            |                 | R             | 20060101            |
| A61B-0017/17             | A                  | I            |                 | R             | 20060101            |
| A61B-0017/58             | A                  | I            |                 | R             | 20060101            |
| A61B-0017/58             | A                  | I            | F               | B             | 20060101            |
| A61B-0017/58             | A                  | I            | L               |               | 20060101            |
| A61B-0017/58             | A                  | I            | F               |               | 20060101            |
| A61B-0017/70             | A                  | I            |                 | R             | 20060101            |
| A61B-0017/70             | A                  | I            | F               |               | 20060101            |
| A61B-0017/70             | A                  | I            | L               |               | 20060101            |
| A61B-0017/70             | A                  | I            | F               | B             | 20060101            |
| A61B-0017/80             | A                  | I            |                 | R             | 20060101            |
| A61B-0017/80             | A                  | I            | F               |               | 20060101            |
| A61B-0017/80             | A                  | I            | L               |               | 20060101            |

|              |   |   |   |   |          |
|--------------|---|---|---|---|----------|
| A61B-0017/80 | A | I | F | B | 20060101 |
| A61B-0017/86 | A | I |   | R | 20060101 |
| A61B-0017/86 | A | I | L |   | 20060101 |
| A61B-0017/86 | A | I | L | B | 20060101 |
| A61B-0017/88 | A | I |   | R | 20060101 |
| A61B-0017/88 | A | I | L |   | 20060101 |
| A61F-0002/00 | A | N |   | R | 20060101 |
| A61F-0002/44 | A | I | L |   | 20060101 |
| A61L-0027/00 | A | I | L | B | 20060101 |
| A61L-0027/54 | A | I | L |   | 20060101 |
| A61L-0027/58 | A | I | L |   | 20060101 |
| A61B-0017/00 | C | N |   | R | 20060101 |
| A61B-0017/16 | C | I |   | R | 20060101 |
| A61B-0017/58 | C | I |   | R | 20060101 |
| A61B-0017/68 | C | I |   | R | 20060101 |
| A61B-0017/68 | C | I | F |   | 20060101 |
| A61B-0017/68 | C | I | L |   | 20060101 |
| A61B-0017/68 | C | I | F | B | 20060101 |
| A61B-0017/68 | C | I | L | B | 20060101 |
| A61B-0017/70 | C | I |   | R | 20060101 |
| A61B-0017/88 | C | I |   | R | 20060101 |
| A61F-0002/00 | C | N |   | R | 20060101 |
| A61L-0027/00 | C | I | L |   | 20060101 |

File Segment: EngPI; ;  
DWPI Class: P31; P32; P34

12/2/9 (Item 9 from file: 350)

Derwent WPIX

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0005786856 *Drawing available*

WPI Acc no: 1992-009012/199202

XRAM Acc no: C1992-003863

XRPX Acc No: N1992-006925

**Valve for engine oil filter with reliable sealing - has valve body cooperating with valve plate and spring supported on valve cover**

Patent Assignee: FILTERWERK MANN & HUMMEL GMBH (FILW)

Inventor: BAUER S; HABIGER H; MACK K; PAVLIN J

Basic Patent ( 8 patents, 9 countries )

| Patent Number | Kind | Date     | Application Number | Kind | Date     | Update | Type |
|---------------|------|----------|--------------------|------|----------|--------|------|
| EP 463289     | A    | 19920102 | EP 1991102307      | A    | 19910219 | 199202 | B    |

Priority Applications (no., kind, date): DE 10459 A 19900711; DE 7022 A 19900623; DE 194 A 19910109

Regional Designated States: AT DE ES FR GB IT SE

#### **Alerting Abstract EP A**

A valve, esp. for an engine oil filter, has a valve body, which cooperates with a valve plate, and a valve spring which is supported on a valve cover for applying force to the valve plate to close the opening between the valve plate and the valve seat, the valve body having, at the valve seat side, a raised edge for receiving the edge of the valve cover. The valve body (10) is cylindrical; the valve cover (15) has a peripheral flange (22) above which uniformly distributed peripheral recesses are provided; and the valve plate (11) has a blind **bone** (25) into which extends a cylindrical guide (24) provided at the top of the cover (5), the valve plate (11) and the cover (15) pref. consisting of injection moulded plastics.

**ADVANTAGE** - The valves provide reliable sealing, contain fewer components than usual, are inexpensive to mfr. and are easily replaceable. @ (10pp Dwg.No.1/6)@

**Title Terms /Index Terms/Additional Words:** VALVE; ENGINE; OIL; FILTER; RELIABILITY; SEAL; BODY; COOPERATE; PLATE; SPRING; SUPPORT; COVER

#### **Class Codes**

International Patent Classification

| IPC  | Class Level | Scope | Position  | Status | Version Date |
|--|-------------|-------|-----------|--------|--------------|
| B01D-035/147; F16K-015/006;<br>F16K-015/06         |             |       | Main      |        | "Version 7"  |
| B01D-035/14; F16K-001/32; F16K-015/02; F16K-017/04 |             |       | Secondary |        | "Version 7"  |

US Classification, Issued: 137540000, 137543190, 137543230

File Segment: CPI; EngPI

DWPI Class: J01; Q66

Manual Codes (CPI/A-N): J01-F02B

? d s

| Set | Items   | Description  |
|-----|---------|--|
| S1  | 74407   | S BONE? ?  |
| S2  | 2306703 | S FIX??? OR FIXAT????                              |
| S3  | 2105063 | S PLATE? ?   |
| S4  | 2444    | S S1(5N)S3   |
| S5  | 2473027 | S DEFORM??? OR DEFORMA???? OR SHAPE?? OR SHAPING?? |
| S6  | 845     | S S4 AND S5  |
| S7  | 2849135 | S HOLE? ? OR OPENING? ? OR APERTURE? ?             |
| S8  | 303793  | S THREAD?? OR THREADING??                          |
| S9  | 52270   | S S7(10N)S8  |
| S10 | 76      | S S6 AND S9  |
| S11 | 662765  | S TOOL? ?  |
| S12 | 9       | S S10 AND S11                                      |

? b 2,5,6,8,34,35,65,73,94,144,434,155,441

#### Estimated Cost Summary

| Project    |            | Client        |              | Charge Code |        | Searcher   |        | Job        |        | Service Code | User Number |
|------------|------------|---------------|--------------|-------------|--------|------------|--------|------------|--------|--------------|-------------|
|            |            |               |              |             |        | John Sims  |        |            |        | 51           | 259276      |
| Date       |            | Time          |              | SessionID   |        | Subsession |        | Subaccount |        |              |             |
| 11/06/2006 |            | 15:08:19      |              | 53          |        | 3          |        |            |        |              |             |
| Data Base  | Dial Units | Access Charge | Print Credit | Types       | Prints | Report     | Rank   | Links      | CSS    | Total        |             |
| 344        | 0.0750     | 0.78          | 0.00         | 0.00        | 0.00   | 0.00       | 0.00   | 0.00       | 0.00   | 0.78         |             |
| 347        | 1.6390     | 17.95         | 0.00         | 0.00        | 0.00   | 0.00       | 0.00   | 0.00       | 0.00   | 17.95        |             |
| 350        | 6.0850     | 93.78         | 0.00         | 33.84       | 0.00   | 0.00       | 0.00   | 0.00       | 0.00   | 127.62       |             |
| 371        | 0.1610     | 0.81          | 0.00         | 0.00        | 0.00   | 0.00       | 0.00   | 0.00       | 0.00   | 0.81         |             |
| Sub Totals | 7.9600     | \$113.32      | \$0.00       | \$33.84     | \$0.00 | \$0.00     | \$0.00 | \$0.00     | \$0.00 | \$147.16     |             |
| Session    | 8.2680     | \$113.50      |              | Telecom     | \$3.06 |            |        |            |        | \$150.40     |             |

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| Totals |  |  |  |  |  |  |  |  |  |
|--------|--|--|--|--|--|--|--|--|--|

[File 2] **INSPEC** 1898-2006/Oct W5

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[File 8] **Ei Compendex(R)** 1970-2006/Oct W4

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[File 144] **Pascal** 1973-2006/Oct W3

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[File 434] **SciSearch(R) Cited Ref Sci** 1974-1989/Dec

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[File 155] **MEDLINE(R)** 1950-2006/Nov 03

(c) format only 2006 Dialog. All rights reserved.

[File 441] **ESPICOM Pharm&Med DEVICE NEWS** 2006/May W2

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? s bone? ?(10n)plate? ?

2174533 BONE? ?

1091433 PLATE? ?

s1 27633 S BONE? ?(10N)PLATE? ?

? s deform??? or deforma???? or shape?? or shaping? or contour?

Processing

255551 DEFORM???

891695 DEFORMA????

1740622 SHAPE??

91443 SHAPING?

199410 CONTOUR?

s2 2928202 S DEFORM??? OR DEFORMA???? OR SHAPE?? OR SHAPING? OR CONTOUR?

? s s1 and s2

27633 S1

2928202 S2

s3 2959 S S1 AND S2

? s thread?? or threading???

67840 THREAD??

18157 THREADING???

s4 82531 S THREAD?? OR THREADING???

? s s3 and s4

2959 S3

82531 S4

s5 60 S S3 AND S4

? s hole? ? or aperture? ? or opening? ?

567786 HOLE? ?

206774 APERTURE? ?

357962 OPENING? ?

s6 1112839 S HOLE? ? OR APERTURE? ? OR OPENING? ?

? s tool? ?

s7 1764248 S TOOL? ?

? s screw? ?

s8 126814 S SCREW? ?

? s s5 and s6

60 S5

1112839 S6

s9 40 S S5 AND S6

? s s9 and (s7 or s8)

40 S9

1764248 S7

126814 S8

s10 40 S S9 AND (S7 OR S8)

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s11 23 RD (UNIQUE ITEMS)

? s s11/2004-2006

Processing

23 S11

13212320 PY=2004 : PY=2006

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6 S12

s13 17 S S11 NOT S12

? t s13/5/1

13/5/1 (Item 1 from file: 5)

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Biosis Previews(R)

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0014500936 Biosis No.: 200300469655

**Apparatus for compressing a spinal disc space disposed between two adjacent vertebral bodies of a cervical spine**

**Author:** Michelson Gary K (Reprint)

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1274 ( 2 ): Sep. 9, 2003 2003

**Medium:** e-file

**Patent Number:** US 6616666 **Patent Date Granted:** September 09, 2003 20030909 **Patent Classification:** 606-61 **Patent Country:** USA

**ISSN:** 0098-1133 (ISSN print)

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** Anatomically contoured anterior cervical plates with bone ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all of the bone screws, with those engaging the vertebrae deployed in highly convergent pairs. The bone screws have a tapered self-tapping leading end, an increasing root diameter with a generally constant outer diameter with a thread that is narrow and sharp throughout and an enlarged head portion capable of an interference fit to the receiving holes of the plate. Instrumentation consists of plate holders, a compression apparatus and a pilot hole forming device that interlocks with the plate. Methods for spinal compression and bone hole preparation are provided.

**Descriptors:**

**Major Concepts:** Biomedical Engineering--Allied Medical Sciences; Methods and Techniques; Orthopedics--Human Medicine, Medical Sciences; Surgery--Medical Sciences

**Methods & Equipment:** anatomically contoured anterior cervical plates--prosthetic; bone hole preparation method--clinical techniques, therapeutic and prophylactic techniques; intersegmental compressive preloading--clinical techniques, therapeutic and prophylactic techniques; spinal disc space compressing apparatus--prosthetic

**Concept Codes:**

10511 Biophysics - Bioengineering

11105 Anatomy and Histology - Surgery

12512 Pathology - Therapy

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

? t s13/5/2-17

13/5/2 (Item 2 from file: 5)

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Biosis Previews(R)

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0014479150 Biosis No.: 200300447869

**Surgical implant**

**Author:** Collins Simon Nicholas (Reprint); Fletcher David Mark

**Author Address:** Gloucestershire, UK\*\*UK

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1274 ( 1 ): Sep. 2, 2003 2003

**Medium:** e-file

**Patent Number:** US 6613053 **Patent Date Granted:** September 02, 2003 20030902 **Patent Classification:** 606-

69 **Patent Assignee:** Corin Limited, Cirencester, UK **Patent Country:** USA

**ISSN:** 0098-1133 \_ (ISSN print)

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** A surgical implant, typically a cervical plate assembly, comprises a plate having at least two **apertures** and two **screw threaded** fastening devices for securing the **plate to bone**. Each **aperture** in the **plate** has an annular groove intermediate opposite ends of the **aperture** and each fastening device comprises an outer **screw** and an inner **plug**. The **screw** has a head at one end, a tip at the other end, an externally **threaded** shank between the head and the tip and an internal bore extending axially through the head and at least part way into the shank for receiving the inner **plug**. The head comprises a plurality of resiliently **deformable** fingers separated by one another by axially extending slits. Each finger has an outwardly projecting rib extending circumferentially of the head intermediate opposite ends of the finger for snap fit engagement in the annular groove of a respective plate **aperture**. The inner **plug** is arranged so that when it is inserted into the internal bore of the **screw** it will prevent contraction of the head of the **screw** thereby preventing the ribs disengaging from the groove.

**Descriptors:**

**Major Concepts:** Equipment Apparatus Devices and Instruments; Orthopedics--Human Medicine, Medical Sciences; Surgery--Medical Sciences

**Methods & Equipment:** annular groove--medical equipment; assembly **aperture**--medical equipment; bone **screw**--medical equipment; cervical plate assembly-- medical equipment; **screw threaded** fastening device--medical equipment; surgical implant--medical equipment

**Concept Codes:**

11105 Anatomy and Histology - Surgery

12512 Pathology - Therapy

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

13/5/3 (Item 3 from file: 5)

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Biosis Previews(R)

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0014407833 **Biosis No.:** 200300366552

**Single-lock anterior cervical plating system**

**Author:** Michelson Gary K (Reprint)

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1272 ( 3 ): July 15, 2003 2003

**Medium:** e-file

**Patent Number:** US 6592586 **Patent Date Granted:** July 15, 2003 20030715 **Patent Classification:** 606-71

**Patent Country:** USA

**ISSN:** 0098-1133 \_ (ISSN print)

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** Anatomically contoured anterior cervical plates with bone ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all of the bone screws, with those engaging the vertebrae deployed in highly convergent pairs. The bone screws have a tapered self-tapping leading end, an increasing root diameter with a generally constant outer diameter with a **thread** that is narrow and sharp throughout and an enlarged head portion capable of an interference fit to the receiving **holes** of the plate. Instrumentation consists of plate holders, a compression apparatus and a pilot **hole** forming device that interlocks with the **plate**. Methods for spinal compression and **bone hole** preparation are provided.

**Descriptors:**

**Major Concepts:** Equipment Apparatus Devices and Instruments; Orthopedics--Human Medicine, Medical Sciences

**Methods & Equipment:** single-lock anterior cervical plating system--medical equipment

**Concept Codes:**

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

13/5/4 (Item 4 from file: 5)

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Biosis Previews(R)

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0014407543 **Biosis No.:** 200300366262

**Bone fastener and instrument for insertion thereof**

**Author:** Sevrain Lionel C (Reprint); Sevrain Christophe J P; Shearin Alan

**Author Address:**

Ridgefield, WA, USA\*\*USA

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1272 ( 2 ): July 8, 2003 2003

**Medium:** e-file

**Patent Number:** US 6589244 **Patent Date Granted:** July 08, 2003 20030708 **Patent Classification:** 606-72

**Patent Assignee:** Walter Lorenz Surgical, Inc. **Patent Country:** USA

**ISSN:** 0098-1133 \_**(ISSN print)**

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** A bone member fastener for closing a craniotomy includes a cap and a base interconnected by a narrow cylindrical collar. The cap has an externally **threaded** stud that screws into an internally **threaded** bore of the collar, thereby allowing the cap and base to be brought into clamping engagement against the internal and external faces of a **bone plate** and surrounding **bone**. In a particularly disclosed embodiment, the base of the fastener is placed below a craniotomy **hole** with the collar projecting into the **hole**, and the stud of the cap is screwed into the bore of the base from above the **hole** to clamp a bone flap against the surrounding cranium. This device provides a method of quickly and securely replacing a bone cover into a craniotomy. The distance between the cap and base can be selected by how far the **threaded** stud of the cap is advanced into the internally **threaded** collar. The fastener is therefore adaptable for use in several regions of the skull having various thicknesses. An insertion **tool** with a long handle permits safe and convenient placement of the base between the brain and the internal face of the **bone plate**. Some

disclosed embodiments of the fastener have a cap and base that conform to the curved surface of the skull, for example by having an arcuate **shape** or flexible members that conform to the curvature of the **bone plate** and surrounding cranial **bone** as the fastener is tightened.

**Descriptors:**

**Major Concepts:** Equipment Apparatus Devices and Instruments; Orthopedics--Human Medicine, Medical Sciences

**Methods & Equipment:** bone fastener--medical equipment; bone fastener insertion instrument-- medical equipment  
**Concept Codes:**

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

13/5/5 (Item 5 from file: 5)

Fulltext available through: [SCIENCEDIRECT](#)

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0014345144 Biosis No.: 200300313863

**Surgical device and method for connection of fractured bones**

**Author:** Gotfried Yechiel (Reprint)

**Author Address:** 10, Ben-Gurion Ave., 27000 Kiriat Blalik, Israel\*\*Israel

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1271 ( 2 ): June 10, 2003 2003

**Medium:** e-file

**Patent Number:** US 6575974 **Patent Date Granted:** June 10, 2003 20030610 **Patent Classification:** 606-67

**Patent Country:** USA

**ISSN:** 0098-1133 \_ISSN print)

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** A screwdriver for re-joining first and second pieces of a fractured **bone** in cooperation with a connector plate. A screw has an **screw-shaped** inner end for biting into the **bone** upon passing through a bore of the connector plate, and out of a **hole** in the first **bone** piece. The screwdriver includes a first shaft unit to engage and rotate the **screw** to move the **screw** axially, and a second shaft unit to rotate an axially movable sleeve. Axial movement of the first shaft unit moves the **screw** so that the outer end of the **screw** passes through the sleeve and into the second shaft unit such that the inner end of the **screw** protrudes inwardly from an inner end of the sleeve, whereby a **threaded** outer end of the sleeve is engaged with the bore of the connector plate before the **screw** is driven into the **bone**.

**Descriptors:**

**Major Concepts:** Equipment Apparatus Devices and Instruments; Methods and Techniques; Orthopedics--Human Medicine, Medical Sciences; Surgery--Medical Sciences

**Organisms: Parts Etc:** bone--skeletal system

**Diseases:** bone fracture--bone disease, injury, surgery

**Mesh Terms:** Fractures (MeSH)

**Methods & Equipment:** connection of fractured bone--clinical techniques, therapeutic and prophylactic techniques; surgical screwdriver--surgical instrument; bone **screw**--medical supplies; connector plate--medical supplies

**Concept Codes:**

11105 Anatomy and Histology - Surgery

12512 Pathology - Therapy

18004 Bones, joints, fasciae, connective and adipose tissue - Physiology and biochemistry

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

13/5/6 (Item 6 from file: 5)

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Biosis Previews(R)

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0014214079 Biosis No.: 200300172798

**Locking element for locking at least two bone screws to an orthopedic device**

**Author:** Michelson Gary K (Reprint)

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1268 ( 1 ): Mar. 4, 2003 2003

**Medium:** e-file

**Patent Number:** US 6527776 **Patent Date Granted:** March 04, 2003 20030304 **Patent Classification:** 606-70

**Patent Country:** USA

**ISSN:** 0098-1133 (ISSN print)

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** Anatomically contoured anterior cervical plates with bone ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all of the bone screws, with those engaging the vertebrae deployed in highly convergent pairs. The bone screws have a tapered self-tapping leading end, an increasing root diameter with a generally constant outer diameter with a thread that is narrow and sharp throughout and an enlarged head portion capable of an interference fit to the receiving holes of the plate. Instrumentation consists of plate holders, a compression apparatus and a pilot hole forming device that interlocks with the plate. Methods for spinal compression and bone hole preparation are provided.

**Descriptors:**

**Major Concepts:** Equipment Apparatus Devices and Instruments; Orthopedics--Human Medicine, Medical Sciences

**Methods & Equipment:** bone screws--medical supplies; bone screw locking element-- medical supplies; orthopedic device--medical equipment

**Concept Codes:**

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

13/5/7 (Item 7 from file: 5)

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0013940521 Biosis No.: 200200534032

**Volar fixation system with articulating stabilization pegs**

**Author:** Orbay Jorge L; Leone James (Reprint)

**Author Address:** Miami, FL, USA\*\*USA

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1261 ( 4 ): Aug. 27, 2002 2002

**Medium:** e-file

**Patent Number:** US 6440135 **Patent Date Granted:** August 27, 2002 20020827 **Patent Classification:** 606-69

**Patent Assignee:** Hand Innovations, Inc. **Patent Country:** USA

**ISSN:** 0098-1133

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** A volar fixation system includes a T-shaped plate intended to be positioned against the volar side of the radial bone, a plurality of bone screws for securing the plate along a non-fractured portion of the radial bone, and a plurality of bone pegs which extend from the plate and into bone fragments of a Colles' fracture. The plate includes including a plurality of screw holes and a plurality of threaded peg holes. The bone pegs can be articulated through a range of angles within respective peg holes and fixed at a desired angle within the range. For each peg, once the peg has been appropriately positioned within the peg hole, a set screw is threaded into the peg hole and tightened, thereby securing the peg in the selected orientation.

**Descriptors:**

**Major Concepts:** Equipment, Apparatus, Devices and Instrumentation; Orthopedics--Human Medicine, Medical Sciences

**Methods & Equipment:** volar fixation system with articulated stabilization pegs--medical equipment

**Concept Codes:**

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

13/5/8 (Item 8 from file: 5)

Fulltext available through: [SCIENCEDIRECT](#)

Biosis Previews(R)

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0013895498 **Biosis No.:** 200200489009

**Single-lock anterior cervical plate**

**Author:** Michelson Gary K

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1261 ( 1 ): Aug. 6, 2002 2002

**Medium:** e-file

**Patent Number:** US 6428542 **Patent Date Granted:** August 06, 2002 20020806 **Patent Classification:** 606-70

**Patent Country:** USA

**ISSN:** 0098-1133

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** Anatomically contoured anterior cervical plates with bone ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all of the bone screws, with those engaging the vertebrae deployed in highly convergent pairs. The bone screws have a tapered self-tapping leading end, an increasing root diameter with a generally constant outer diameter with a thread that is narrow and sharp throughout and an enlarged head portion capable of an interference fit to the receiving holes of the plate. Instrumentation consists of plate holders, a compression apparatus and a pilot hole forming device that interlocks with the plate. Methods for spinal compression and bone hole preparation are provided.

**Descriptors:**

**Major Concepts:** Equipment, Apparatus, Devices and Instrumentation; Orthopedics--Human Medicine, Medical Sciences; Surgery--Medical Sciences

**Methods & Equipment:** bone **hole** preparation method--therapeutic method; single-lock anterior cervical plate--medical equipment; spinal compression method-- therapeutic method

**Concept Codes:**

12512 Pathology - Therapy

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

13/5/9 (Item 9 from file: 5)

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Biosis Previews(R)

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0013864058 Biosis No.: 200200457569

**Anterior cervical plating system, instrumentation, and method of installation**

**Author:** Michelson Gary K

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1260 ( 2 ): July 9, 2002 2002

**Medium:** e-file

**Patent Number:** US 6416528 **Patent Date Granted:** July 09, 2002 20020709 **Patent Classification:** 606-185

**Patent Country:** USA

**ISSN:** 0098-1133

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** Anatomically contoured anterior cervical plates with bone ingrowth surfaces, providing for intersegmental compressive preloading, and a rigid and locked interface to all of the bone screws, with those engaging the vertebrae deployed in highly convergent pairs. The bone screws have a tapered self-tapping leading end, an increasing root diameter with a generally constant outer diameter with a **thread** that is narrow and sharp throughout and an enlarged head portion capable of an interference fit to the receiving **holes** of the plate.

Instrumentation consists of plate holders, a compression apparatus and a pilot **hole** forming device that interlocks with the **plate**. Methods for spinal compression and **bone hole** preparation are provided.

**Descriptors:**

**Major Concepts:** Equipment, Apparatus, Devices and Instrumentation; Methods and Techniques; Orthopedics--Human Medicine, Medical Sciences; Surgery--Medical Sciences

**Methods & Equipment:** anterior cervical plating system--anatomically contoured, medical equipment; bone **hole** preparation--surgical method; bone screws--increasing root diameter, medical equipment, self-tapping leading end; compression apparatus--increasing root diameter, medical equipment, self-tapping leading end; pilot **hole** forming device-- increasing root diameter, medical equipment, self-tapping leading end; plate holders--increasing root diameter, medical equipment, self-tapping leading end; spinal compression method--surgical method

**Concept Codes:**

12512 Pathology - Therapy

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

13/5/10 (Item 10 from file: 5)

Fulltext available through: [SCIENCEDIRECT](#)

Biosis Previews(R)

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0013784172 Biosis No.: 200200377683

### Apparatus for rigidly fixing craniomaxillofacial tissue grafts and bone plates

**Author:** Carchidi Joseph Edward (Reprint); Balfour Alan R

**Author Address:** 132 Samuel Ave., West Bridgewater, MA, 02379, USA\*\*USA

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1259 ( 1 ): June 4, 2002 2002

**Medium:** e-file

**Patent Number:** US 6398785 **Patent Date Granted:** June 04, 2002 20020604 **Patent Classification:** 606-73

**Patent Country:** USA

**ISSN:** 0098-1133

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** A self-drilling and tapping multi-drive bone screw (10) for rigid fixation of craniomaxillofacial tissue grafts and bone plates has a tip (12a) which incorporates a defined twist drill shaft with a sharp cutting point tip (12b) to easily pierce and drill a pilot hole and prepare for the insertion of self-tapping screw threads (12c). A cylindrical dome shaped head (14) for rigid fixation of craniomaxillofacial tissue grafts and geometrically sized bone plates is formed on the screw distal to the drilling and tapping features. A spline feature (14e) is incorporated into the cylindrically dome shaped head for easy pickup, assembly and insertion of the bone screw with a corresponding spline driver tool (20). The spline driver feature also allows the bone screw (10) to be driven with either a standard square or cross blade driver tool.

#### Descriptors:

**Major Concepts:** Equipment, Apparatus, Devices and Instrumentation; Orthopedics--Human Medicine, Medical Sciences; Surgery--Medical Sciences

**Organisms:** Parts Etc: bone graft--skeletal system; craniomaxillofacial tissue graft--skeletal system

**Methods & Equipment:** multi-drive bone screw tapping and self-drilling apparatus--surgical instrument

#### Concept Codes:

12512 Pathology - Therapy

18004 Bones, joints, fasciae, connective and adipose tissue - Physiology and biochemistry

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

13/5/11 (Item 11 from file: 5)

Fulltext available through: [SCIENCEDIRECT](#)

Biosis Previews(R)

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0013687440 Biosis No.: 200200280951

### Volar fixation system

**Author:** Orbay Jorge L

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1257 ( 1 ): Apr. 2, 2002 2002

**Medium:** e-file

**Patent Number:** US 6364882 **Patent Date Granted:** April 02, 2002 20020402 **Patent Classification:** 606-69

**Patent Assignee:** Hand Innovations, Inc. **Patent Country:** USA

**ISSN:** 0098-1133

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** A volar fixation system includes a T-shaped plate intended to be positioned against the volar side of the radial bone, a plurality of bone screws for securing the plate along a non-fractured portion of the radial bone, and a plurality of bone pegs which extend from the plate and into bone fragments of a Colles' fracture. The plate is a T-shaped plate including a plurality of screw holes and a plurality of threaded peg holes. According to a first preferred aspect of the invention, the peg holes are preferably linearly or parabolically arranged and provided such that the holes are positioned increasingly distal in a medial to lateral direction along the second side. According to a second preferred aspect, axes through the holes are oblique relative to each other and preferably angled relative to each other in two dimensions. The system includes a guide plate which temporarily sits on top of the volar plate and includes holes oriented according to the axes of the peg holes for guiding a drill into the bone fragments at the required orientation. The volar plate is positioned against the radius and screws are inserted through the screw holes to secure the volar plate to the radius. The bone fragments are aligned, and the guide plate assists in drilling pilot hole. The pegs are inserted through the peg holes and into the drilled holes in the bone. The volar system thereby secures the bone fragments in proper orientation.

**Descriptors:**

**Major Concepts:** Equipment, Apparatus, Devices and Instrumentation; Orthopedics--Human Medicine, Medical Sciences

**Methods & Equipment:** volar fixation system--prosthetic

**Concept Codes:**

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

13/5/12 (Item 12 from file: 5)

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0013098466 **Biosis No.:** 200100270305

**Anterior lateral spine cage-plate fixation device and technique**

**Author:** LeHuec Jean-Charles (Reprint); Liu Mingyan; Josse Loic

**Author Address:** Bordeaux, France\*\*France

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1241 ( 1 ): Dec. 5, 2000 2000

**Medium:** e-file

**Patent Number:** US 6156037 **Patent Date Granted:** December 05, 2000 20001205 **Patent Classification:** 606-

**61 Patent Assignee:** SDGI Holdings, Inc. **Patent Country:** USA

**ISSN:** 0098-1133

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** An interbody fusion cage has an externally **threaded** stem projecting from a domed outer end. A **contoured** plate is provided with an **aperture** receivable on the stem. The stem **threads** receive a nut to fix the **plate** to the cage. **Bone screws** anchor the **plate** to vertebral bodies. A hemispherical surface on the plate and surrounding the stem-receiving **aperture** and bearing on the dome, accommodates universal angulation of the plate relative to the cage. In addition to a cage installation **tool**, there is a plate installation **tool** assembly including a cage installer, a plate holder, a nut holder and cage adjuster, a nut driver, and a plate holding prong controller.

**Descriptors:**

**Major Concepts:** Equipment, Apparatus, Devices and Instrumentation; Orthopedics--Human Medicine, Medical Sciences; Methods and Techniques

**Methods & Equipment:** anterior lateral spine cage-plate fixation device--medical equipment; anterior lateral spine cage-plate fixation technique--surgical method

**Concept Codes:**

00532 General biology - Miscellaneous

13/5/13 (Item 13 from file: 5)

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0012567868 Biosis No.: 200000286181

**Provisional fixation pin**

**Author:** Castleman David (Reprint)

**Author Address:** Bartlett, TN, USA\*\*USA

**Journal:** Official Gazette of the United States Patent and Trademark Office Patents 1227 ( 3 ): Oct. 19, 1999 1999

**Medium:** e-file

**Patent Number:** US 5968046 **Patent Date Granted:** October 19, 1999 19991019 **Patent Classification:** 606-73

**Patent Assignee:** Smith and Nephew, Inc., DE, USA **Patent Country:** USA

**ISSN:** 0098-1133

**Document Type:** Patent

**Record Type:** Abstract

**Language:** English

**Abstract:** A method and apparatus for reducing a fracture provides a provisional fixation pin to provisionally affix the **bone plate** to the **bone** prior to the installation of the **bone plate** with permanent attachment, such as **bone screws**. The method and apparatus of the present invention will maintain some reduction without significantly compromising the bone. The method utilizes a provisional fixation pin having an upper or proximal unthreaded shaft section and a lower externally **threaded** shaft section. A cutting tip is provided at the extreme distal end of the fixation pin. In between the proximal and distal sections is an enlarged diameter section that has an annular surface sized and shaped to conform to the countersunk surface of **openings** in the **bone plate**.

**Descriptors:**

**Major Concepts:** Equipment, Apparatus, Devices and Instrumentation; Orthopedics--Human Medicine, Medical Sciences

**Methods & Equipment:** provisional fixation pin--medical supplies

**Concept Codes:**

00532 General biology - Miscellaneous

13/5/14 (Item 14 from file: 5)

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0012229518 Biosis No.: 199900489178

### **Inside-outside technique for posterior occipitocervical spine instrumentation and stabilization: Preliminary results**

**Author:** Pait T Glenn (Reprint); Al-Mefty Ossama; Boop Frederick A; Arnautovic Kenan I; Rahman Salim; Ceola Wade

**Author Address:** Department of Neurosurgery, University of Arkansas for Medical Sciences, 4301 West Markham Street, Little Rock, AR, 72205-7199, USA\*\*USA

**Journal:** Journal of Neurosurgery 90 ( 1 SUPPL. ): p 1-7 Jan., 1999 1999

**Medium:** print

**ISSN:** 0022-3085

**Document Type:** Article

**Record Type:** Abstract

**Language:** English

**Abstract:** Object. The authors present a series of 16 patients who underwent inside-outside occipital and posterior cervical spine stabilization. Methods. In this technique, the screw was placed from the inside of the occiput to the outside. An articular (lateral) mass plate was contoured to the shape of the occipital bone and the cervical spine and affixed to the occiput with a flat-headed screw or stud placed through a burr hole in the calvaria with the flat head of the screw in the epidural space and the threads facing outward. The bone plate was then secured with a nut to the occipital screw and the cervical plate was attached to the spine with a bone screw that coursed through the plate and into the articular pillar. Our series included six children and 10 adults. In five patients, previous fusion had failed; in two patients spinal instability was secondary to Down's syndrome; two patients' instability was related to developmental anomalies; and in five patients spinal instability was due to the presence of tumor. One patient with rheumatoid arthritis had undergone a transoral procedure. Two patients had suffered traumatic fracture. Three patients died of causes unrelated to the procedure, one patient died of metastatic cancer, and one patient died in a long term care facility of cardiopulmonary complications. One patient with renal failure suffered a hemorrhage from an arteriovenous fistula after being treated with dialysis. In one child, a nut backed off after 3 months. The nut was reseated, and a maturing arthrodesis was present. Conclusions. The authors conclude that the inside-outside occipitocervical fixation is an effective technique for stabilizing the cervical spine.

#### **Descriptors:**

**Major Concepts:** Orthopedics--Human Medicine, Medical Sciences; Surgery--Medical Sciences

**Biosystematic Names:** Hominidae--Primates, Mammalia, Vertebrata, Chordata, Animalia

**Organisms:** human (Hominidae)--adult, child, patient

**Common Taxonomic Terms:** Animals; Chordates; Humans; Mammals; Primates; Vertebrates

**Methods & Equipment:** cervical spine stabilization--inside-outside technique, therapeutic method , posterior, occipital; spinal fusion--surgical method, therapeutic method; spinal instrumentation--equipment

#### **Concept Codes:**

18001 Bones, joints, fasciae, connective and adipose tissue - General and methods

10502 Biophysics - General

25000 Pediatrics  
12512 Pathology - Therapy  
**Biosystematic Codes:**  
86215 Hominidae

13/5/15 (Item 15 from file: 5)

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0010120790 Biosis No.: 199698588623

### **Biomechanical properties of threaded inserts for lumbar interbody spinal fusion**

**Author:** Tencer Allan F (Reprint); Hampton David; Eddy Sharon

**Author Address:** Dep. Orthop., Harborview Med. Center, ZA-48, 325 Ninth Ave., Seattle, WA 98104, USA\*\*USA

**Journal:** Spine 20 ( 22 ): p 2408-2414 1995 1995

**ISSN:** 0362-2436

**Document Type:** Article

**Record Type:** Abstract

**Language:** English

**Abstract:** Study Design: Calf and human cadaveric spines were used to determine motion segment stiffness and laxity after implantation of **threaded** inserts (the Ray **Threaded** Fusion Cage, Surgical Dynamics, Inc., Concord, CA), comparing direction of placement, number of implants, **shape** of the device, and integrity of anterior spine structures. Stiffness and laxity of spines with inserts were compared with those with **bone** grafts, with and without posterior fixation **plates**. Objectives: To determine the mechanical stabilizing properties of a **threaded** insert used for lumbar and lumbosacral fusion and the factors affecting stability. Summary of Background Data: Limited biomechanical information has shown that implantation of these devices adds stiffness to the lumbar spine, but little information is available concerning stiffness in loading directions other than flexion and extension, the effect on stiffness of position and number of implants, and the effect of this device on motion segment laxity. Methods: Mechanical properties were determined by testing lumbar vertebral motion segments in flexion, extension, lateral bending, and torsion combined with axial compressive loading. Stiffness (slope of the load/ deflection curve) and neutral zone angle or laxity (angular displacement of the vertebra from no load to 1.0 Nm moment) were determined. Initial tests were performed on calf lumbar vertebrae to determine the effects of placement and number of inserts. Comparisons of **bone** grafts and inserts with and without supplemental **plates** were made using human lumbar spines. Cylindrical- and conical-shaped inserts, when placed from anterior, were tested in calf spines. The load-bearing capacity of the insert supported in calf vertebral body bone was determined. Results: There was no significant effect of placement of inserts in different orientations (lateral, posterolatera), or posterior) on stiffness, except in torsion where posterior placement damaged facets or lamina, reducing stiffness. Placement of two inserts from posterior decreased flexion and lateral bending laxity compared with the intact motion segment. Compared with intact, bone grafts produced more stiffness only in lateral bending and had no effect on laxity. Supplemental posterior plates fixed by pedicle screws across the fusion segment increased flexion and lateral bending stiffness and reduced laxity in flexion, extenison, and lateral bending. Conical-shaped inserts placed from anterior into cylindrical holes distracted soft tissue structures, decreasing laxity. Cutting the anterior structures increased laxity by relieving some tissue tension caused by distraction. The mean maximum compressive load that could be supported by the insert was 2998 N (standard deviation = 980 N). Structural failure occurred in the supporting bone. Conclusions. **Threaded** inserts increased vertebral motion segment stiffness and decrease laxity by distracting intervertebral structures. They are not sensitive to placement, except if vertebral structures are injured during insertion and produce constructs with more consistent mechanica properties than bone grafts.

**Descriptors:**

**Major Concepts:** Skeletal System--Movement and Support; Surgery--Medical Sciences

**Biosystematic Names:** Bovidae--Artiodactyla, Mammalia, Vertebrata, Chordata, Animalia; Hominidae --Primates, Mammalia, Vertebrata, Chordata, Animalia

**Organisms:** cattle (Bovidae); human (Hominidae)

**Common Taxonomic Terms:** Artiodactyls; Nonhuman Vertebrates; Nonhuman Mammals; Animals; Chordates; Humans; Mammals; Primates; Vertebrates

**Concept Codes:**

11105 Anatomy and Histology - Surgery

11311 Chordate body regions - Lumbar

12512 Pathology - Therapy

18006 Bones, joints, fasciae, connective and adipose tissue - Pathology

**Biosystematic Codes:**

85715 Bovidae

86215 Hominidae

13/5/16 (Item 1 from file: 34)

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11412893 Genuine Article#: 647LA Number of References: 12

Scanning electron microscopic observations of 'fractured' biodegradable plates and screws

**Author:** Kosaka M (REPRINT) ; Uemura F; Tomemori S; Kamiishi H

**Corporate Source:** Kinki Univ,Sch Med, Dept Plast & Reconstruct Surg,377-2 Ohno Higashi/Osakasayama City/Osaka 5898511/Japan/ (REPRINT); Kinki Univ,Sch Med , Dept Plast & Reconstruct Surg,Osakasayama City/Osaka 5898511/Japan/

**Journal:** JOURNAL OF CRANIO-MAXILLOFACIAL SURGERY , 2003 , V 31 , N1 ( FEB ) , P 10-14

**ISSN:** 1010-5182 **Publication date:** 20030200

**Publisher:** CHURCHILL LIVINGSTONE , JOURNAL PRODUCTION DEPT, ROBERT STEVENSON HOUSE, 1-3 BAXTERS PLACE, LEITH WALK, EDINBURGH EH1 3AF, MIDLOTHIAN, SCOTLAND

**Language:** English **Document Type:** ARTICLE

**Geographic Location:** Japan

**Journal Subject Category:** DENTISTRY, ORAL SURGERY & MEDICINE; SURGERY

**Abstract:** Background. We encountered two out of 100 cases in which implanted biodegradable plates and screws had fractured within 1 month postoperatively. Material: Failure of the material was confirmed through clinical symptoms, radiographs or CT findings. In addition, four specimens obtained from these two cases were examined with regard to their ultrastructure using scanning electron microscopy. Results: Several principal patterns of the fractured surface were found: (1) gradual cracking, i.e. 'circular stair' and, (2) tortuous threads, i.e. a wavy line. It is conceivable that the material may not have been hit by major sudden forces but a disproportion between the thread configuration and the drilled hole may have led to screw loosening and torsion. Subsequently, the threads were deformed in a 'wavy' manner, finally leading to cracking and fracture of plates and screws. Fractures of plates and screws due to these instabilities are thought to be distinguishable from material resorption. Conclusion: In the application of biodegradable materials, more than two screws per single bone segment should be used as a principle of plate-fixation technique in order to avoid a stability-compromising situation, particularly in the stress-bearing

areas of the maxillofacial region. Moreover, three-dimensional fixation using more than two plates is recommended in the, facial skeleton e.g. zygomatic tripod. Intermaxillary fixation should also be considered to reinforce initial stability in stress-bearing areas. (C) 2002 European Association for Cranio-Maxillofacial Surgery.

**Identifiers-- KeyWord Plus(R): PEDIATRIC CRANIOFACIAL SURGERY; POLY(L-LACTIDE) BONE PLATES; ORTHOGNATHIC SURGERY; FIXATION**

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13/5/17 (Item 1 from file: 73)

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**EMBASE**

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06775259 **EMBASE No:** 1997056753

**Comparative pull-out strength of tapped and untapped pilot holes for bicortical anterior cervical screws**

Ronderos J.F.; Jacobowitz R.; Sonntag V.K.H.; Crawford N.R.; Dickman C.A.

Dr. C.A. Dickman, c/o Neuroscience Publications, Barrow Neurological Institute, 350 West Thomas Road, Phoenix, AZ 85013-4496 United States

Spine ( SPINE ) ( United States ) 1997 , 22/2 (167-170)

**CODEN:** SPIND **ISSN:** 0362-2436

**Document Type:** Journal ; Article

**Language:** ENGLISH **Summary Language:** ENGLISH

**Number Of References:** 21

**Study Design.** This biomechanical study analyzed the axial pull-out strength of tapped versus untapped pilot holes for bicortical screws in the anterior cervical spine. **Objective.** To determine which pilot hole preparation method was mechanically better. **Summary of Background Data.** Tapping pilot holes in the lumbar spine was previously shown significantly to reduce pull-out strength of pedicle screws. No study was found investigating the effect of tapping on pilot holes for anterior cervical bicortical screws. **Methods.** Twenty-five unembalmed human cadaveric cervical vertebrae (C3-C7) were tested. Two identical pilot holes were drilled into each vertebra: one pilot hole was tapped, and the control pilot hole was not tapped. A fully threaded cortical bone screw was inserted into each pilot hole. **Screw pull-out strength** was determined using a servocontrolled hydraulic materials testing system and an axial load cell. **Force-deformation** and failure curves were obtained. **Results.** There were no statistically significant differences between the axial pull-out strength of tapped and untapped pilot holes at any vertebral level. Mean force-to-failure was 386 +/- 42 N in the untapped pilot holes and 397 +/- 48 N in the tapped pilot holes. **Conclusions.** Tapping a pilot

**hole** for bicortical screws of the anterior cervical spine neither weakens nor strengthens the axial pull-out strength of fully **threaded** cortical bone screws. Tapping may be unnecessary; however, it may be desirable in patients with dense bone to cut the **thread** profile into the bone or if the screws have dull tips and **threads**.

**DRUG DESCRIPTORS:**

methacrylic acid methyl ester

**MEDICAL DESCRIPTORS:**

\* cervical spine injury--surgery--su; \*spine stabilization

adult; aged; article; biomechanics; **bone plate**; **bone screw**; cadaver; clinical article; controlled study; female; human; human tissue; male; priority journal; spine injury--surgery--su; spine surgery; vertebra body

**CAS Registry Number:** 80-62-6 (methacrylic acid methyl ester)

**Section Headings:**

027 Biophysics, Bioengineering and Medical Instrumentation

033 Orthopedic Surgery

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| Set | Items   | Description   |
|-----|---------|---|
| S1  | 27633   | S BONE? ?(10N)PLATE? ?  |
| S2  | 2928202 | S DEFORM??? OR DEFORMA???? OR SHAPE?? OR SHAPING? OR CONTOUR? |
| S3  | 2959    | S S1 AND S2   |
| S4  | 82531   | S THREAD?? OR THREADING???                                    |
| S5  | 60      | S S3 AND S4   |
| S6  | 1112839 | S HOLE? ? OR APERTURE? ? OR OPENING? ?                        |
| S7  | 1764248 | S TOOL? ?   |
| S8  | 126814  | S SCREW? ?  |
| S9  | 40      | S S5 AND S6   |
| S10 | 40      | S S9 AND (S7 OR S8)   |
| S11 | 23      | RD (unique items)   |
| S12 | 6       | S S11/2004-2006   |
| S13 | 17      | S S11 NOT S12   |

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| 2          | 0.6580     | 5.85          | 0.00         | 0.00        | 0.00   | 0.00       | 0.00 | 0.00       | 0.00 | 5.85         |             |
| 5          | 0.7130     | 4.28          | 0.00         | 33.00       | 0.00   | 0.00       | 0.00 | 0.00       | 0.00 | 37.28        |             |
| 6          | 0.1710     | 1.25          | 0.00         | 0.00        | 0.00   | 0.00       | 0.00 | 0.00       | 0.00 | 1.25         |             |
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| 34         | 0.9100     | 21.36         | 0.00         | 6.82        | 0.00   | 0.00       | 0.00 | 0.00       | 0.00 | 28.18        |             |
| 35         | 0.1550     | 0.64          | 0.00         | 0.00        | 0.00   | 0.00       | 0.00 | 0.00       | 0.00 | 0.64         |             |
| 65         | 0.2130     | 0.87          | 0.00         | 0.00        | 0.00   | 0.00       | 0.00 | 0.00       | 0.00 | 0.87         |             |
| 73         | 0.5790     | 6.48          | 0.00         | 3.10        | 0.00   | 0.00       | 0.00 | 0.00       | 0.00 | 9.58         |             |
| 94         | 0.3050     | 1.07          | 0.00         | 0.00        | 0.00   | 0.00       | 0.00 | 0.00       | 0.00 | 1.07         |             |
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| 441            | 0.0740  | 0.54     | 0.00   | 0.00    | 0.00   | 0.00   | 0.00   | 0.00   | 0.00   | 0.54     |
| Sub Totals     | 5.8610  | \$56.75  | \$0.00 | \$42.92 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$99.67  |
| Session Totals | 14.2330 | \$208.74 |        | Telecom | \$1.71 |        |        |        |        | \$253.35 |

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